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DEPARTMENT

—OF—

COLONIZATION, MINES AND FISHERIES.

Physical & Applied Sci. Serials
Engineering

Mining industry 1907

MINING OPERATIONS

— IN THE —

PROVINCE OF QUEBEC

FOR THE YEAR

1907

— BY —

J. OBALSKI,

SUPERINTENDENT OF MINES

QUEBEC

PRINTED BY CHARLES PAGEAU,

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HON. C. R. DEVLIN,

Minister of Colonization, Mines & Fisheries,

Quebec.

Sir,

I have the honor to submit my report for the year 1907. It includes notes of a second exploration which I made in the unsurveyed region to the north of the county of Pontiac and the usual informations on the different mining industries of the Province. It is accompanied by three maps for the use of prospectors or explorers.

You will observe that, if we have no new discovery to announce, the progress of the mining industry continues, the total output amounting to $5,391,370 as against $5,020,000 in 1906.

The regions to the North have been explored and prospected, but cannot be developed until railways are built.

I have the honor to be,

Your obedient servant,

J. OBALSKI,

Superintendent of Mines.

Quebec, February, 1908.

Mining Operations.

IRON

There is nothing new to report in the manufacture of charcoal pig iron which was continued with the same results by the three blast furnaces of the Canada Iron Furnace Co., Ltd. at Radnor and John McDougall & Co. at Drummondville. These two companies mostly use bog ore. The following quantities in tons of 2000 lbs show the year's operations:

Ore charged	22,681	tons	worth $80,231.00
Limestone charged	4,300	"	" 2,098.00
Charcoal	1,151,149	bushels	" 90,765.00

(The usual weight of the bushel being taken to be 20 lbs.)

Pig iron produced 8,970 long tons, corresponding to 10,047 tons of 2000 lbs.

Except in the case of the bog ore deposits, no important work was done on any of the other iron mines of the province.

HEMATITE IN DUNHAM (County of Missisquoi.)

I examined the iron deposits in this township and especially a strip of ferruginous dolomite which traverses it in a N. E. direction. The outcroppings of this rock, which follows the stratification of the chloritic schists of the region, show several parallel strips of variable thickness, but it can be stated that this formation runs for a distance of about eight miles and is encountered over transverse distances ranging from $\frac{1}{4}$ to even $\frac{1}{2}$ mile. This dolomite possesses a certain analogy to the ankerite of Londonderry (Nova Scotia) and a similar rock is found in the township of Chester, P. Q.

It is sometimes strongly mineralized and presents masses of hematite irregularly distributed and occasionally taking the form of veins that range all the way to a couple of feet in thickness. This ore is of remarkable quality and I append the analysis of a good specimen by Mr. M. L. Hersey from lot I, 5 of Dunham.

Metallic iron	69.49%
Silica	1.32%
Sulphur	0.10%
Phosphorus	0.08%

The quantity of iron ore in sight is perhaps not large, but I consider that this strip of dolomite should be prospected and that small prospects might be made at the points where the iron ore outcrops, which might lead to the discovery of more important masses susceptible of being worked, the rock itself supplying a good flux.

I give no details as regards the lots upon which ore has been found, as I simply wish to call attention to this formation, which has moreover been mentioned by Sir William Logan in his report of 1847.

MAGNETIC IRON AND TITANIC IRON IN THE SEIGNIORY OF RIGAUD VAUDREUIL
(Beauce.)

A deposit of iron ore situated in the northern corner of this Seigniory was mentioned a long time ago in the reports of the Geological Survey, but never located since. During the year, residents of Beauceville made search for it and found at a short distance from the Rivière des Plantes in the St. Charles range a pretty considerable body of titanic iron, which at one point showed a width of twenty feet. Other prospecting was done in a north-easterly direction and the same ore was found especially at a distance of one mile further between the St. Charles and St. Gaspard ranges. Lastly, on a block at the northern corner, pretty extensive work was done in the way of cuttings and a shaft of 20 feet, which revealed for a distance of 100 feet a mass of ore showing a maximum width of 35 feet.

These different deposits seem to occur in a same zone in a north-easterly direction and are met with in the serpentine strip, following the Rivière des Plantes.

At certain points, the ore is essentially magnetic, occasionally really becoming loadstone and then containing very little titanium.

MAGNETIC SAND

Experiments for the industrial treatment of these sands are still being carried on and progress is annually made under this head. The question

may be thus summed up : the magnetic sands of the North Shore can be industrially concentrated into a product yielding from 67 to 70% of metallic iron, in the neighborhood of 1% of titanium and practically no sulphur or phosphorus. Different magnetic separators have been tried and several of these have given good results.

As regards the smelting of the ore, certain inventors claim that it can be treated directly by the electric furnace for iron and steel, while others are content to seek to agglomerate it in order to use it as ordinary ore in the blast furnaces. The former process is still in the experimental stage, while the latter has been successfully employed with other crushed ores.

At Herrang, in Norway, where there are blast furnaces near a deposit of low grade magnetite, Mr G. Grondal crushes these ores yielding about 25% of iron and concentrates them by means of a machine of his own invention, obtaining a concentrate of about 60% of iron. These concentrates are compressed into the form of briquettes without the addition of any agglomerating matter except humidity and pass through kilns heated by the waste gases from the blast furnace at a temperature reaching 1400° C, enough to soften the oxyde of iron and from which these briquettes issue sufficiently agglomerated to be conveyed to the adjacent furnace and even to undergo transportation to a long distance. This process appears to have been successful and to have been applied to a large number of deposits of low grade ores, especially in Sweden, but also in other countries of Europe and in the United States.

Our magnetic sands have been treated by this Grondal process and I am informed that the concentration has been satisfactory, but that owing to the polished and worn condition of the sand having prevented a good agglomeration, these concentrates were crushed and briquettes were obtained therefrom which became perfectly agglomerated and yielded a product comparable to that obtained from other ores.

We can therefore hope to see in the near future these magnetic sands worked industrially and give rise to the establishment of an important industry in this province.

TITANIC IRON

There is nothing to note with respect to these ores, which, however,

continue to be the object of experiments with a view to their utilization. As they are practically a mixture of magnetite and ore of titanium, the Grondal process might perhaps be applicable to this class of ores carrying the least titanium.

OCHRE

It is only in the neighborhood of Three Rivers and especially at St. Malo that this product is extracted and calcined on the spot by the three companies, the Canadian Paint Co., the Champlain Oxyde Co., and S. W. Argall, who ship the ochre thus calcined to Canada and the United States where it is manufactured into paints ; a portion is also shipped crude.

The output for 1907 was 2700 tons of 2000 lbs of crude ochre worth $5,400 and 2300 tons of calcined worth $29,430 or a total value of $34 830. The work lasted five to ten months and employed 75 men.

CHROME IRON

Chrome iron was worked this year in the township of Colraine by three companies.

The Black Lake Chrome & Asbestos Co., took out less than last year owing to the fact that a part of the year was utilized in sinking near No. 1 shaft an inclined shaft which is to have a depth of 400' and which is intended to work an important body of chrome, which was struck last year in borings with the diamond drill. All the company's efforts have been concentrated upon these works and little was done near Lake Caribou ; the output of the ore has therefore been small and the concentration mill was only in operation during a part of the year. Towards the close of the season, the mass of ore in shaft No. 1 was reached and will be regularly worked in 1908.

The same company operated the Dominion Chrome Co's mine and mill near little Lake St. Francis, which was formerly known as the Leonard Mine and then as the Montreal Chrome Iron Co's. Ore is still found abundantly in it, but of a grade below 50%. At the time of my visit in October, some thirty men were employed in the mine and mill. The works consisted of a large excavation, 60 feet deep and of 100' by 40' along the entire length of which chrome was visible, showing at some points thicknesses of 12

to 15 feet. In the N. E. part of the excavation, work was carried on in a tunnel, 50 feet long in which good ore was found. Under ordinary conditions, some 30 tons of ore are taken out per day, a portion of which is shipped in lumps as second quality ; the remainder is treated in the mill and yields concentrates of a good grade. The mine is worked by means of two boom derricks and a steam drill, the works being moreover a continuation of the older ones. The ground was previously prospected by means of borings with the diamond drill ; ten holes of a hundred feet in depth were made therein and the ore was struck at a depth of about 40'.

The mine is situated on lots 25 and 26 of the IInd range of Colraine and lot 26 of the IIIrd range also belongs to the Company ; it is about 8 miles from Colraine station.

The mill is a stamp mill equipped with 15 stamps and 4 Wilfley tables and can handle 30 tons of rock daily which gives a variable proportion of concentrate according to the grade of the ore treated.

A notable feature of this mine is a dyke of compact white rock, a part of which is violet in color, this coloration being due to manganese.

The American Chrome Co worked during a portion of the year with 15 men and developed the old works on lots 6 and 7 of range B of Colraine, from which a good quantity of ore was extracted.

Derricks and steam drills are employed. A portion of the ore is treated in the mill, one mile distant, on lot 9 of the XIIIth range. This mill is composed of a crusher, of 10 stamps and of 3 Wilfley tables and is 5 miles from Chrome Siding.

The Canadian Chrome Co, whose headquarters are at St. Hyacinthe, worked during most of the year on lot 16 of range A of Colraine.

I visited this property towards the end of July ; an average of 18 men was employed. The mine consists of two excavations of 40 and of 80 feet, worked by a cable derrick and chrome is pretty abundantly visible in it irregularly distributed through the serpentine.

The mill is equipped with 1 Blake crusher 10" x 20", 20 stamps and 5 Wilfley tables. 50 tons of rock are handled daily, yielding a concentrate

of 50%. The mine further produces chrome in the lump of a grade superior to 50%. The ore is shippéd to Thetford (Beaver Mine Siding), situated 3¼ miles from the mine by a road partly built by the Company.

The power used in the mine and mill (100 H. P.) is supplied by the St. Francis Water-Power Co.

This company intends to develop its works, but meets with some difficulty in securing the water required for the mill.

Some small prospects have been made on lots 7 and 8 of XIIIth range of Colraine by Messrs R. Topping and Th. Dumais, from which a couple of carloads of good ore have been taken and one carload shipped.

No work was done by the Star Chrome Co.

The output of chrome for 1907 was as follows in long tons.

1st class in rock	145	worth	$ 1,925
2nd "	3536	"	33,485
Concentrates	2040	"	27,720
Total	5721 gross tons.		$63,130

Corresponding to 6407 tons of 2000 lbs.

76 men were employed during periods of from 4 to 11 months.

COPPER

The copper market was very unsettled during the year and the hopes entertained of seeing our copper mines developed were not realized owing to the fall in prices towards the close of the year. Still the mines of the Capelton region were regularly worked by the Nichols Chemical Co. and the Eustis Mining Co.

At the latter's mine, the workings have reached a depth of 2800 feet and the electric power operating them is supplied by a water-fall developed by the company itself on the little river Coaticook and situated at two miles from the mine. Concentration works have been installed near the line of the railway to treat the debris of the mine. They have a capacity

of 200 tons of concentrate per 24 hours and are composed of 4 Blake crushers, 3 double crushing rollers and 8 Wilfley tables.

The body of ore in sight continues very large and of different grades.

At the Nichols Co's Albert mine, the works were continued in shaft No. 1. At its chemical works, the company manufactures sulphuric, nitric and chlorhydric acids and Glauber salt, utilizing the ore from its own and the neighbooring mines of the region, and also iron pyrites from Ontario, where this company owns the Hungerford mine in the county of Hastings.

The Ascot mine was worked with a few men during a part of the year and a small quantity of good grade ore was taken out and shipped to Capelton.

Mr A. O. Norton, of Coaticook, has acquired the control of the Suffield and King mines, which he has prospected for several years, but recently there has been a greater development of his workings which I visited in October. The property consists of lots ¾ of 2 and 3 (Sufflield mine), 4 (Bean mine) and 5 (King mine) in the XIth range of Ascot, say, about 560 acres.

Work was begun in January 1906, and since that date an inclined shaft of 200 feet has been sunk, which, after traversing the former workings of the King mine, continues to follow the ore body running in a N. E. direction and showing thicknesses running from 4 to 12 feet of ore of good grade in sulphur and copper similar to those of the region. About one thousand tons have been extracted and are at the mine, but thus far have not been shipped.

At the time of my visit, some fifteen men were employed. The plant is composed of a steam boiler of 100 H. P. from Jenckes Co. of Sherbrooke, running a hoisting machine and a compressor of 5 drills from Allis Chalmer, of Montreal. It is proposed to continue the shaft to a depth of 300' and to begin the regular working at that depth.

Besides these mines, some prospecting was done for copper in the environs of Sherbrooke, but no mining work was done.

In the whole region, 26,405 long tons of copper ore corresponding to 29,574 tons of 2000 lbs of a value of $160,455 were got out. Of these, 17,797 long tons were treated at Capelton and the rest shipped to the United States. 250 men were employed during most of the year.

In other parts of the province, especially at Chibogomo, in the northern part of the county of Pontiac, on the North Shore and in the Matapédia region, prospecting was done on some good indications of copper ore. Generally speaking, owing to the remoteness, no important work was undertaken.

LEAD, ZINC AND SILVER

We are not aware that anything was done this year on the galena mine in the township of Duhamel at Lake Temiscamingue or on the deposits of galena and blende of Calumet Island where work was begun last year and from which 22 tons of ore were shipped. In Gaspé Bay, the deposit of galena already worked long ago at Grande Grève, was prospected.

GOLD

Except some prospecting by individuals in localities formerly worked, no work was done in Beauce Still we should not abandon the hope of finding in the Chaudière Valley other auriferous deposits than those of the river Gilbert, which first attracted attention to this region and on this head I give the following notes.

GOLD IN BEAUCE

The history of the gold mines of the Chaudière Valley is a repetition of that of all gold mines, with the sole exception that they occur in a peopled and accessible region provided with railway communication, which may still hold out a future for them.

About 1863, great excitement was produced by the discoveries made on the river Gilbert, which yielded large quantities of coarse gold ; nuggets weighing as much as 45 ounces were found and a multitude of miners prospected the region. The mines were then reached from Quebec by waggon, the distance being some 50 miles. Legal difficulties hampered the industry, without paralyzing it, however, for the workings were continued down to

1878 ; but since then they have only been carried on in a very irregular fashion and on a small scale ; the period of individual effort moreover has passed and, if even the workings are resumed, they should be so only by strong companies supplied with sufficient capital. I estimate that about $2,000,000 worth of gold were taken out of the valley of the river Gilbert along a distance of nearly two miles.

I would call attention to the following points :

1. What is called the Gilbert lead runs in a general S. W. direction and the workings are at an elevation of about 300 feet above the Chaudiere river, which flows toward the N. W. The gold was found only in the middle part of the river Gilbert at the altitude about mentioned,

2. If from this point we follow the heights of the N.E. bank of the Chaudière valley, the presence of gold is noted on crossing the river Famine, then on the Slate creek where some work was done and next, on the Rivière du Loup, not far from its junction with the Chaudière, we find large banks of gravel also containing gold, but in less quantity and we again meet it further on on the other side of the Chaudière near the first falls.

3. Proceeding towards the N. W. on leaving the Gilbert, the Rivière des Plantes is crossed, where some little work was done and where gold was found. Beauce Junction is then reached, where enormous piles of unworked gravel are seen.

From these facts, I am led to conclude :

1. That the gold is not irregularly distributed at a few points on the region, especially on the Gilbert, but, on the contrary, that the distribution must have followed natural laws.

2. That the line of distribution or of deposit of those alluviums may be that connecting the different points above mentioned.

I therefore consider that search should be undertaken along this line of distribution and, without taking into account the elevation of the ground, contrary to the theory generally prevalent in the region, which led to avoidance of the elevated points.

On the other side of the river, large gravel deposits are also remarked between the Pozer river and the Rivère des Meules and on these streams gold has been found, especially on the latter, which might lead one to suppose another line of distribution connected, perhaps, with the first towards the great falls of the Chaudière.

The foregoing, however, is only a theory, which needs facts to confirm it, but in this district all the geological investigations made as to the source of the gold have not given satisfactory results and it is therefore permissible to put forward this new hypothesis, which would cause gold to be looked for at the points absolutely neglected heretofore.

The formation, as described by the Geological Survey, is composed of Cambrian and pre-Cambrian schists, traversed by dioritic eruptions.

Numerous quartz veins, some of which are very considerable, run through this formation. Tests have been made of this quartz ; two stamp mills even have been erected, but gold in commercial quantity has not been obtained from it and personally, in twenty-five years experience, I have never found visible gold in the quartz and the specimens which I have had analyzed to my satisfaction, have yielded nothing beyond traces of the precious metal.

A certain number of theories have been advanced as to the origin of the alluvial gold ; some seeking to account for it by the desintegration of the richer part of these quartz veins, but thus far none of these theories have supplied the solution of the problem.

If we confine ourselves to the alluvial deposits, a good way to study them, keeping in view the foregoing observations, would be to make systematic borings by means of portable boring machines, following the line of distribution of the gravels without regard to the altitude, in order to ascertain whether they contain rich parts that are workable.

GOLD IN MARSTON

At the end of 1906, it was learned that auriferous quartz had been discovered in this township. A mining license covering a part of lots 19 and 20 of range V, and prospecting licenses on the neighboring lots were granted to Mr G. A. McIver of Sherbrooke, but no work was done before the fall

of 1907. I visited this prospect and I found at the S. E. corner of lot 20 of range V a quartzous outcropping which may be followed for about ¼ of a mile and in which a hole of a dozen feet had been sunk ; the vein shows a width of 17 feet and trends in an E. N. E. direction, following the stratification of the schists forming the country rock and having a decidedly vertical dip. This rock which rests directly on the schist, is composed of a kind of greenish or greyish quartzite, which is traversed by small veins of compact quartz of a thickness not exceeding one inch and containing visible gold in pretty large abundance, as I observed in the many specimens which I picked up on the spot. I also washed with the pan several handfuls of the debris coming from these rocks, in which I found a great many colors of gold, some of which were of fair size. I further took eleven specimens of the mass of quartz at different points of the outcropping. The assay made by Mr M. L. Hersey gave for one of these specimens 2 hundreths of an ounce of gold to the ton, for another half an ounce to the ton and for the other nothing or traces.

The important point is to ascertain whether all this mass would pay treatment by a mill.

A local syndicate under the name of the "*Marsboro Gold Mining Syndicate*" has been organized by a few persons belonging to Lake Megantic and Sherbrooke. Numerous prospecting licenses have also been granted for the same region and the probability is that prospecting will be undertaken next spring. In anticipation of this, a map on a scale of 1 mile to the inch has been prepared, showing the township of Marston and the adjoining townships.

It is interesting to mention this discovery, as this is the first time that gold in the quartz in apparently commercial quantity has been found in the valley of the Chaudière river.

OTHER AURIFEROUS DISTRICTS

Besides the valley of the Chaudière, it may be stated that gold in small quantities has been found in nearly all the streams, in the southern part of the Eastern Townships.

In the streams descending from Stoke mountain, in the townships of

Stoke, Dudswell and Westbury, alluviums are found which have a local character established by the presence of pieces of quartz containing gold that does not occur in the alluviums of the Chaudière. On lot 13 of the VIth range of Westbury, there is a big quartzous mass which I called quartzous conglomerate resembling the rock in Marston and traversed by small quartz veins in which gold can be seen with the naked eye.

In the township of Ditton, alluviums comparable to those of the Chaudière have been worked and have given in the past good results to their owner, but no auriferous quartz was found there.

In the township of Ascot in the neighborhood of Sherbrooke, a little work has been done on the alluviums and, in the schists forming the bedrock there are large lenses of quartz containing visible gold. Attention was drawn to this district forty years ago, but it was afterwards abandoned. It has again claimed attention and the alluviums have been slightly prospected.

From all that precedes, it will be seen, on examining the map of the Province of Quebec, that alluvial gold has been noted at various points in the Eastern Townships sometimes in commercial quantities ; but that very little auriferous quartz has been discovered. This region is easy of access and well populated, and I consider that there are sufficient indications there to encourage other researches, which is the object of the present remarks.

DISTRICTS TO THE NORTH

In my report of the exploration to the North of the county of Pontiac, I alluded to indications of gold towards Lake Opasatica and I refer to that report for information on the subject.

At Chibogomo, other prospects north of Lake Doré have established the presence there of mineralized veins containing gold, but nothing can be done in that quarter before the opening up of communications.

ASBESTOS

The asbestos industry was very flourishing during the past year. The demand for this product is on the increase and the prices have risen in corresponding proportions.

The utilization of the short fibres in the manufacture of boards has stimulated the opening of new mines containing little or no crude and to this cause is attributable the development of East Broughton.

Most of the companies now use electric power furnished by the Shawinigan Water Power Co. and the St. Francis Water-Power Co.

I give hereafter a few details on the companies in operation.

THETFORD

The King Bros' Mine which had passed under the control of Mr. H. M. Whitney, president of the American Asbestos Co. has recently reverted to King Bros. under the name of *King Asbestos Mines*. Work is continued in the same manner and under the same management. There is nothing to note in connection with the mine nor with the two mills except that electricity is the motive power throughout.

The Bell mine has also given good results with its underground works. All the products of these works and of the quarry formerly operated by cable derricks, are now carried to the mill by a cable tramway and the company is to build a branch from the mill to the line of the Quebec Central Railway for shipping its asbestos. The mine and mill are worked by electricity.

The Johnson mine continues its operations in the mine and in the two mills to which extensive additions have been made.

The Beaver Asbestos Co., which worked intermittently of late years, has resumed the working of its mine and mill in a regular manner, the power used being mostly electricity.

BLACK LAKE

During the year, the American Asbestos Co., acquired the mines of the Montreal & Glasgow Asbestos Co. and of the Manhattan Asbestos Co., so that the company now owns a large block of land represented by lot 32 of range B, of Colraine, the lands of the two above companies in Block A of Colraine forming together a lot 872 feet wide along the Ireland line by over a mile and a half in length towards the south-east, as far as lake Caribou ; besides lots 25 and 26 of range VII and part of 28 of range VI of Ireland.

The company thus has pratically in operation four independent mines connected with the mills by a small railway. The old mill of the Manhattan Co. is now in operation, but the principal part of the work is done at the mill erected by the company near the Quebec Central, fed from a central store house, whither the rock from all the mines is brought.

The company uses electric power from Shawinigan. It has built houses for its workmen, who number about 200.

The Johnson Co. works on lot 31 of range B of Colraine. Two new derricks have been put up at the mine and the mill works regularly.

The Standard Asbestos Co. has divided its territory and has, with the south-eastern part, formed a new company : "*Dominion Asbestos Co. Ltd.*" The latter has, during the year, built a mill of considerable capacity which will be soon in operation. The Standard Asbestos Co. continued working the mine and mill with the same results.

Preparations are being made to re-open the Union mine on the S. W. half of lots 27 and 28 of range B after an interruption of several years. The Reed mine on lots 27, 28 and 29 of range A of Colraine was not worked this year. Its owner is negotiating to transfer it to the Megantic Asbestos Co. of Portland.

BROUGHTON

In consequence of the development of the asbestos fibre industry for certain special uses, especially for making asbestos boards, the East Broughton mines, which produce no crude, have acquired some importance this year and new companies have been organized to mine on these lots.

The Broughton serpentine, which is the continuation towards the north-east of the Black Lake and Thetford belt, has a width not exceeding from 700 to 800 feet ; the rock is generally schistous and in that state is full of fibre which is easily separated in the mill. The only mine that has produced crude, is the Fraser mine at the south-eastern limit of the serpentine belt and formerly very long and very silky asbestos was obtained from it which was in contact with a vein of talc. It had been mined by means of underground workings, but it is now abandoned. After this company, two others put up mills which have worked regularly of late years. During

the past year, another mill has been built and two others are under construction, while the Broughton Asbestos Fibre Co. and the Quebec Asbestos Co. have worked regularly in the mines and mills with good results.

The Eastern Townships Asbestos Co. works that part of lot 13 of range VI of Broughton which bears the number 13*b* S. W. It has put up a two cyclone mill on it with the accessories used by the other mills. The mine is opened in the vicinity and is served by a cable derrick. The mill began to work in the month of November, with good results.

The *Frontenac Asbestos Mining Co.* is a new company which controls lot 13*a* in range VI ; it at once began to build a mill of good capacity which will be in operation in 1908.

The *Boston Asbestos Co.* is likewise a new company which is opening a mine and proposes to build a mill on lot 13*b* of range V of Broughton ; it also controls lots 13*c* and 14*a* of the same range.

Several other prospects have been carried on in the same region, among others on the following lots : N. E. parts of 13*a* and 13*c*, lots 13*b*, 13*d*, 13*f*, 13*h*, range IV (Miller Mine), 13*e*, 13*f*, 13*g*, of range VII (Tanguay mine) and on lots 13*a*, 13*b*, 13*c*, 13*d* of range VIII.

All the above works and prospects have been carried on in the same serpentine belt mentioned above and the rock to be treated in the mill is all more or less of the same nature.

COLRAINE

Last year, I spoke of the organization of a new company to work the old mines near Colraine Station. I visited those works at the end of October ; the mines and mills were abandoned and I understood that they had been in operation for part of the year only. The two mines adjoining one another had been re-opened and work had been done in the quarries and underground, wherein asbestos of good length is seen which could yield crude. The mill is of the ordinary cyclone kind and produced a certain quantity of fibre which was shipped. It is situate about half a mile from Colraine Station (Q. C R.) The work was done by the Colraine Asbestos & Exploration Co. Ltd., which owns the mill and worked the mine of the Premier Asbestos Co. under a royalty.

WOLFESTOWN

The only mine worked in this township is on lot IV N. E. 25½, by the Asbestos Mining & Manufacturing Co. of Providence, R. I. This company has put up a very complete installation on the property, consisting of a mill of great capacity, with the usual plant, excepting cyclones which are replaced by crushing rollers, both plain and corrugated, and beaters. The capacity of the mill is 350 tons of rock per ten hours. The company has been in operation for some time, but now all the machinery is driven by electricity and the Shawinigan Power Co. was able to supply the power only in the month of September 1907. The company uses 700 H.P. supplied by the main line of 50,000 volts, reduced to 2,200 for the largest motors and 850 for the smaller ones, and consisting of the following: one motor of 300 H. P. for the mill; one of 75 H. P. for the crusher and drier; three of 10 H. P. for the conveyors and one of 300 H. P. for the air compressor.

The whole of the electric plant was furnished by the Westinghouse Co.

The compressor supplied by the Rand Drill Co. has a capacity of 1725 cubic feet per minute with a pressure of 100 lbs. capable of supplying some twenty drills. At present it is used for drilling, and for operating 4 cable derricks and a pump.

Work is being done in the old quarry, 100 feet by 100 feet and about 50 feet deep. The company is also opening a new quarry on top of the hill, 120 feet higher than the mill and at a distance of 1600 feet. Two cable derricks are being put up and the rock will be conveyed to the mill by a tramway of a gauge of 42 inches which is built in two sections owing to the steepness of the slope.

The mill is five and a half miles from Colraine Station and the company has had to build three miles of railway and put up a telephone line.

Owing to the fact that the electric and other installations had to be completed, the company has produced only a little this year, but it proposes to have the mine and mill in full operation in 1908.

It is said that another company is to open the old Bellmina mine and work on the property comprising the following lots of Wolfestown: I S. E. ½ 23; II 23, 24; III 24, under the name of the Bellmina Asbestos Co.

OTHER MINES

Last year Dr J. Reed prospected with the aid of steam machinery on lot 13 of range V of Thetford where good indications of crude and of fibre rock are to be seen. I visited that property in November and found that rather important work had been done and that the indications were encouraging

Prospecting was also done on lot IV 16 of Thetford, where indications of asbestos can be seen.

The latter property has passed under the control of a new company, the "*Robertson Asbestos Mining Co.*" which proposes to work it. The mine is about a mile from Robertson Station (Q. C. R.)

A little prospecting was done in the township of Garthby, especially on lots II, 16, 17, III, 16, 17, 18.

Some was also done in Beauce, especially in the seigniory of Rigaud Vaudreuil, and the township of Bolton (Brome), XI, 7, where good indications of asbestos are to be seen.

DANVILLE

The Asbestos & Asbestic Co. continued to work with the greatest activity, nearly 400 men being employed in the mine and in the mills.

At the beginning of the year electric power was installed, supplied by the Shawinigan Co. and the steam plant was also retained in case the power should be off.

The following is a description of the installation from notes supplied by the company.

The Shawinigan Water and Power Co. has established on the company's grounds a transformer station with three transformers of 1,000 K. W. H., giving 2,200 volts instead of 50,000.

The company uses 2000 H. P. divided as follows :

1 motor of	900 H. P.	with 450 revolutions	to the minute	for the mill.
1 "	300 H. P.	225 rev. per min.	for the mill.	
1 "	300 H. P.	600 "	"	
1 "	300 H. P.	580 "	for the compressor.	
1 "	50 H. P.	900 "	for the pump.	
1 "	50 H. P.	600 "	for repair shop.	
1 "	25 H. P.	600 "	for driers.	
1 "	3½ H. P.	600 "	550 (volts)	for a pump.

All these motors are supplied by the line of 2200 volts with the exception of the latter and are 30 cycle motors.

The mine consists of the old quarry 200 feet deep served by 18 cable derricks. A little above the bottom a prospecting tunnel has been driven which at the time of my visit at the end of October was 160 feet long and 10 x 12 feet in dimension ; this tunnel runs towards old workings which have recently been resumed ; 2 cable and 1 boom derrick have been put up there.

The asbestos found in this quarry and in the large one is of good quality and abundant.

The drilling is done by compressed air supplied by a compressor operated by electricity and capable of supplying 20 drills. The hoisting is done with cable derricks working independently by means of steam-winches.

Besides the quarries, the old dumps are being worked which contain much asbestos.

The separating plant consists of three complete mills with six cyclones and another mill has also been put up for treating the tailings that were thrown away although they still contain a little fibre. The power in all these shops is electric.

This property has a very good plant and produces an important quantity of crude and fibre asbestos of fine quality. It also ships a good deal of asbestic. It is in direct connection with the Grand Trunk R. R. at Danville Station by means of a line four miles long belonging to the com-

pany and operated by it. The company also has at the mine many buildings and repair shops with tool machines.

The quantity of products shipped during the year 1907 from the various districts of the Province is as follows, in tons of 2,000 lbs.

1st class (crude)	1,487 tons	worth	$367,438.00
2nd " "	2,938 "	"	462,323.00
Fibre	19,905 "	"	780,013.00
Paper stock	37,655 "	"	846,145.00
Total	61,985		$2,455,919.00
Asbestic	29,193		27,292.00
Total value			$2,483,211.00

The number of men employed was 2141 : their wages amounted to $930,061.00 and they worked throughout the year in the more important mines.

AMBER MICA

The amber mica industry was rather flourishing during the year, as will be seen by the quantities shipped as compared with those for the previous year. Prices, especially for small mica, were remunerative. Nevertheless, towards the end of the year, the demand very suddenly ceased and the large establishments in Ottawa, where mica was being prepared for market, had to shut down or send away a portion of their staffs. It is probable that the market will be restored as soon as the excess supplied consumers is used up.

The most important producing company was the Blackburn which continues to work the Perkins Mill mine with good results. There is nothing special to mention about this mine which introduced electricity this year for hoisting and pumping. A couple of hundred tons of phosphate were also got out and shipped.

The company prepares all its mica and also buys a little from small producers. During the year the company's trimming shop in Ottawa was destroyed by fire, but another one has been put up.

The other companies producing mica are the Wallingford Mica and Mining Co., Wallingford Bros Ltd., Chabot & Co., Th. J. Watters, H. J. Flynn, Vavassour Mining Association, Cawood Mica Co., Kent Bros, Gatineau Valley Mica Co. and some other small producers.

The quantity of mica shipped in 1907 may be summed up as follows :

1/2 Thumb-trimmed	204,276	lbs.....	worth	$ 30,633
1/3 "	139,240	"	"	34,891
2/3 "	86,003	"	"	44,460
2/4 "	71,852	"	"	49.235
3/5 "	24,248	"	"	20,090
4/6 "	12,597	"	"	13,083
5/8 "	4,074	"	"	5,347
Total thumb trimmed	542,290			$197,739
Split.....	7,957	"		2,109
	550,247			$199,848
Rough-culled mica, 150 tons of 2000 lbs.....				24,030
Total value.....				$223,878

The mica industry gave employment to 288 work people in the Province: 150 in the mines and the others at trimming. The work covered periods of from five to twelve months and the sum of $108,600 was paid in wages :

No white mica was got out this year. The General Mining Co. did some prospecting and put up an installation at the Maisonneuve and Pieds des Monts mines.

PHOSPHATE

A little phosphate was got out with mica in the Ottawa region, among others by Blackburn Bros who got out and shipped 200 tons of 80% and 60 tons of 60%.

Mr J. F. Higginson, of Buckingham, manager of "The Capelton Chemical and Fertilizer Co." which prepares superphosphate, used 35 tons

of phosphate obtained in the Province, and the Electric Reduction Co. of Buckingham, which manufactures phosphorus and phosphated chemical products, uses 300 tons, also obtained in the Province.

The total value of that phosphate, comprising 408 tons of 2,000 lbs. may be estimated at $3,410.00.

It should be observed that during the past years American phosphate was imported for the Buckingham factories mentioned above and this year the Capelton Chemical and Fertilizer Co. also imported some from Perth, Ontario, although Buckingham is the shipping centre of a region which formerly produced large quantities of phosphate. It is probable, however, that in future we shall be able to produce more. The fertilizer industry uses low-grade phosphates while the electro-chemical industry requires high grades.

GRAPHITE

Prospecting for graphite was carried on during the year in the Buckingham, Grenville and Labelle districts. In the Buckingham region, the Diamond Graphite Co., an American company, worked on lot 13 or 14 of range X of Buckingham, and put up a mill on that property in the years 1906 and 1907. The mine and mill were in operation for about three months at the beginning of the year and a small quantity of graphite was prepared. Some ore was also got out from lot 12.

The dry process is the one altogether followed.

The Bell Mine, an English company, which controls lots 1, 2 and 3 of range V of Buckingham, has been working since the beginning of 1907 on lot 2 and has taken out a fairly large quantity of ore It has also begun to build a concentration mill which will be probably finished in the spring.

The Buckingham Graphite Co., whose works and mill are on lot 19 B of range VIII of Buckingham, did not work during the year, but shipped a certain quantity of last year's products. This mill uses the Brumell process for concentration.

None of the other graphite mines in the Buckingham region were in operation during the year.

The only company that worked in the Grenville district during the year was the Calumet Mining and Milling Graphite Co., an American company, which controls lots II 16, and III 16 of Grenville.

A mill has been put up there and the company worked the mine and mill only during the first part of the year : a small quantity of merchant able graphite was prepared.

In the township of Amherst, Messrs P. Tetreault and A. Roy prospected on lots 15, 16, 17 of range VI which they purchased from the Crown as a mining concession, and found good indications on it.

In the township of Joly, a local company, called the Iroquois Graphite Syndicate of Labelle, also prospected with some success.

The quantity of prepared graphite shipped this year represents 120 tons of 2,000 lbs, worth $5,000.00. About 75 workmen were employed for periods of from 3 to 5 months.

As may be seen this industry is languishing and this has practically been the case from the outset. Important deposits of disseminated graphite have been found, extensive works undertaken, about ten mills put up on various bases or rebuilt on new plans ; the finished product has also been acknowledged to be of good quality and yet the production is insignificant.

For information respecting the graphite industry, I refer to a monograph published in 1907, by the Bureau of Mines, Ottawa, under the title of : "*Graphite its properties and occurrence, refining and uses*", by Fritz Cirkell, M. E. which deals with the subject at length, and to an article published in the Canadian Mining Journal of the 1st June, 1901, by H. P. H. Brumell, M. E., of Buckingham, who has for many years identified himself with that industry in our Province ; also to a paper read by that gentleman before the Canadian Mining Institute in 1907.

COMBUSTIBLE NATURAL GAS

In July last I visited the gas wells operated by the Canadian Gas and Oil Co., whose office is now in Three Rivers.

That company sank a certain number of wells in the vicinity of Louiseville, Yamachiche and St. Barnabé, 13 of which struck gas in merchantable quantities. Those wells begin with a diameter of six inch casing and generally strike gas at a depth of from 225 to 300 feet, that is in the neighborhood of solid rock which seems, in that region, to be the Hudson River limestone that outcrops opposite Three Rivers on the other side of the River St. Lawrence. They pass through clay, fine sand and gravel of variable thicknesses before striking the solid rock and gas. The company has a boring plant and the work is done very rapidly. It has also sunk some testing wells, among others, one on the Yamachiche river, north of St. Barnabé, some twelve miles from the St. Lawrence. At the time of my visit it was 500 feet deep : it began directly on the Trenton limestone, 50 feet of which were pierced, then it met 200 feet of sandstone which seems to me to belong to the Potsdam formation : the remainder is Laurentian gneiss which is found at the northern end of the Trenton basin. This work was abandoned and another testing well begun further south.

The producing wells are cased and connected with the distributing line. I examined several of these wells and found the pressure good.

The Company has laid down lines of pipes which supply gas to St. Barnabé, Yamachiche and Louiseville, and in the summer of 1907, it completed a line of 8 inch pipe 13 miles long for supplying gas in Three Rivers. It bought out the old gas company of that city and laid 6 inch pipes in the streets which enables it to supply gas for heating and lighting at very low prices, which I mentioned in my previous report. The pressure in the city is reduced to four ounces.

The gas of this region is very good and is not sulphurous. As to duration, every body knows that it is surface gas and I estimate that, in order to find more lasting reservoirs, it will be necessary to bore deeper into the rock and locate the wells towards the south.

The fact must not be lost sight of that those reservoirs are not inexhaustible ; that they should be dealt with sparingly and preparations should be made for the future in case the gas should disappear.

In addition to the company above mentioned, private individuals bore with two inch pipes for their own use at several points in the region and in other parts of the St. Lawrence valley, where gas has been found.

Prospecting has also been carried on in the vicinity of St. Hyacinthe and a well has been bored to a depth of 275 feet.

MISCELLANEOUS

Neither feldspar nor baryta were mined this year; neither has the kaolin found in Amherst township nor the talc deposits of the Eastern Townships been developed.

Nothing new has been done in connection with peat.

Some prospecting has been done on indications of molybdenite, but so far no mining has been carried on. It has been found at several points in the northern part of the county of Pontiac, especially on Keewagama lake and river. In the same region, bismuthinite or oxyde of bismuth has been found in fairly large quantities.

In Fabre township, near Lake Temiscamingue, small veins of smaltite and niccolite (cobalt and nickel ore analagous to that found at Cobalt) have been discovered and it is even claimed that a little native silver has been found. Prospecting is being carried on in that region and small shafts are being sunk, but so far no ore has been got out.

I should also mention some work done in connection with a deposit of magnesite or carbonate of magnesia on lot XI N½ 18 of Grenville, county of Argenteuil. A couple of hundred tons were got out and 35 tons shipped for trial.

Magnesite is used as an absorbent in the manufacture of dynamite, as a source of carbonic acid, is transformed into sulphate in the manufacture of wood pulp, as a source of magnesia for chemical or medicinal use, for the manufacture of refractory materials, in sugar refining, as isolator in electrical apparatus, etc.

PORTLAND CEMENT

This industry is about to assume considerable proportions in our Province and we may look forward to a production of over one million barrels in 1908.

We already had the International Cement Co. Ltd., of Hull, in full and successful operation; now two new companies have established themselves in the vicinity of Montreal.

J. M. Morgan's factory, at Longue Pointe, has been transferred to the Forwick Co., a building company, which is putting up an establishment of large capacity ; this will be finished during 1908 and will then be transferred to the " *Vulcan Portland Cement Co., Ltd.*

The *Lakefield Portland Cement Co.*, has put up a factory at Pointe-aux-Trembles a little further than that above mentioned. It is now finished and in operation.

Those three companies use the same process, being on the Trenton limestone formations and in the vicinity of clay deposits.

The limestone is crushed fine and mixed in suitable proportions (so as to have one part of clay to four of carbonate of lime) with clay also dried and pulverized. This mixture is put into inclined cylindrical kilns which turn slowly. At the other end crushed coal is introduced with a current of air and the combustion produced in the cylinders bakes the cement which, as it turns in the kilns, works its way to the other end where it is gathered and carried to pulverizers from which it issues ready for market.

The disposal of the apparatus may vary as well as the proportions of clay and limestone according to the analysis of the latter.

Thus in 1908 we shall have three factories in operation and the International Cement Co. of Hull intends to extend its installation so as to increase its output.

BUILDING MATERIALS

Slate was got out from the Rockland quarries, as in the past, and also paving stones in Dudswell.

Granite was chiefly quarried in Stanstead township ; a little at Rivière-à-Pierre and a little at Lake Megantic.

A new company : " *The Laurentian Granite Co, Ltd.*," began operations in March 1907 in range VII of Chatham, county of Argenteuil.

That company, which employs 120 men during the year, prepares stone for building, foundations, pavements and blocks for monuments. A considerable quantity of those various products were got out and shipped to various points in Canada and some, it seems, to Cuba.

There is nothing special to mention in connection with the other granite companies.

The manufacture of bricks and lime and the getting out of limestone for building continued as in the past. In my previous reports I spoke of the difficulty of obtaining full information on these very numerous minor industries and I will again confine myself to giving the same figures as last year in connection with their production..

Summary statement of the production of the mines in the Province of Quebec, for the year 1908

KIND OF MINERALS (Tons of 2000 lbs.)	Wages paid $	Number of workmen	Quantities shipped or used	Gross value $
Bog iron ore	28,974	100	22,681	80,231
Calcined ochre	20,197	75	2,300	29,430
Raw ochre	.....	.....	2,700	5,400
Chrome iron	31,801	76	6,407	63,130
Copper ore	103,884	250	29,574	160,455
Asbestos	930,061	2,141	61,985	2,455,919
Asbestic	.....	.....	29,193	27,293
Mica, trimmed (pounds)	108,600	288	550,247	199,848
Mica, crude	.....	.....	150	24,030
Phosphate of lime	.....	.....	408	3,410
Prepared Graphite	15,000	75	120	5,000
Magnesite	.....	.....	35	.....
Slates (squares)	15,000	50	4,336	20,056
Flag stones (square yards)	1,350	6	3,000	2,550
Cement (barrels)	170,000	350	.....	640,000
Granite (cubic yds)	238,761	653	51,873	560,236
Lime (bushels)	33,500	124	556,000	96,000
Bricks	300,000	1462	94,000,000	525,000
Tiles and pottery	.....	.....	.....	270,000
Limestone (cubic yds)	155,882	515	97,710	223,580
Totals	$2,153,010	6,165		5,391,368

The total production of minerals got out, shipped or utilized in the Province of Québec was thus $5,391,368.00 for 1907.

This value represents that of the merchantable product at the mine or at the nearest shipping point, either in the raw state or after having undergone a first preparation to make it suitable for use or for sale, as explained in previous reports. This explanation is given to serve for the purpose of making a comparison with the figures supplied by the bureaux of mines of the other provinces.

We have only in a very incomplete manner the value of the products of the mines manufactured in our Province which, without adding to the total given above, adds to the importance of our mining and metallurgical industries.

Thus iron is always transformed into pig iron ; a portion of the chrome into ferrochrome ; copper ore into matte and into sulphuric acid ; phosphate into superphosphate, mica into micanite, etc.

We have not included in the production the value of the natural gas, nor of the mineral waters which, nevertheless, represent a certain value, but one very difficult to estimate.

During the year 6165 workmen were employed in the mining industry ; their total wages amounted to $2,153,010.00 and they worked for periods varying between four and twelve months.

According to the reports received, 9 men were killed and 5 seriously injured in mining accidents.

I would specially mention Mr John Blue, manager of the Eustis mine, who was killed in the mine itself in November 1907. He had been for many years identified with the mining industries in our Province and president of the Mining Association of the Province of Quebec. He will be remembered as an upright and just man who died while doing his duty.

LEGISLATION

The changes made in the Mining Law during the last sesion (7 Edward 7 ch. 18, sec. 1,) were mentioned in last year's report and a new edition of the Mining Law has been published.

The only change since then has been made by an order-in-council of the 26th November 1907, putting mineral waters in the class of inferior metals and stating that the lands containing the same can be sold in lots of less than 100 acres in superficies.

List of Joint Stock Mining Companies incorporated in the Province of Quebec, since the 1st July 1905.

Names of Companies.	*Date of incorporation.*	*Capital.*	*Offices.*
The Black Lake Chrome & Asbestos Co..... (Supplementary Letters Patent)	24 August 1905..	$ 500,000	.Montreal.
The Quebec Iron Ore Co.....	10 October 1905.	500,000	.Quebec.
The King Asbestos Mines Co..... (Supplementary Letters Patent)	24 October 1905.	1,600,000	.Quebec.
The Quebec Gas & Oil Co.....	14 Nov. 1905...	250,000	.Quebec.
Chibogomo Gold & Asbestos Co.....	1st Dec. 1905...	5,000,000	.Montreal.
Wright & Co.....	20 Dec. 1905....	15,000	.Hull.
The Griffin Crucible Graphite Mining & Milling Co.....	20 Dec, 1905 ...	20,000	.Montreal.
The Eagle Mining Co.....	6 March 1906.,	20,000	.Rock Island.
The Dominion Prospecting & Mining Co....	2 May 1906....	300,000	.Montreal.
The Tilbury & Temiscamingue Silver Mining & Development Co.....	6 June 1906...	300,000	.North Temiscamingue.
Manhattan Cobalt Mining Co. of Quebec....	12 Nov. 1906...	100,000	.Montreal.
The King of the North Gold Mines Co	20 Dec. 1906.....	1,000,000	.Montreal.
The Great Northern Gold Fields.....	20 January 1907	2,000,000	.Montreal.
La Cie des Carrières de Saint Marc..... (Supplementary Letters Patent).	28 Feb. 1907....	2,500	Ste-Marie des Carrières
La Cie des Mines d'Or de Pontiac et Abitibi.	12 March 1907..	1,000,000	.Montreal.
La Cie Electrique de Ciment de Drummondville.....	28 March 1907..	100,000	.Drummondville.
The Davis Consolidated Mines Co.....	19 April 1907...	2,000,000	.Montreal.
The Height of Land Co.....	22 April 1907...	2,000,000	.Montreal.
Saint Laurent Quarry Co.....	22 May 1907....	20,000	.Montreal.
The Chibogomo Bonanza Mining Co.....	5 June 1907...	1,000,000	.Montreal.
The Northern Quebec Mining & Development Co	3 August 1907.	100,000	.Quebec.
Eastern Townships Asbestos Co.....	13 July 1907....	240,000	.East-Broughton,
The Frontenac Asbestos Mining Co.....	2 July, 1907....	500,000	.Quebec.
The Canada Asbestos Co, Ltd..... (Supplementary Let. Pat.), changing the name to Provincial Asbestos Co. Ltd.	30 Oct. 1907....	1,000,000	.Montreal.
La Cie Minière de la vallée du Saint-Maurice.	1st August 1907.	1,000,000	.Grand'Mère.
The Beaver Asbestos Co..... (Supplementary Let. Pat.)	17 Sept. 1907...	300,000	.Sherbrooke.
Pontiac Mining & Milling Co.....	26 Sept. 1907...	20,000	.Quebec.
La Compagnie d'exploration et de mines de Thetford North.....	16 Oct. 1907....	20,000	.Drummondville.
Railroaders Mines Co, Ltd.....	8 Nov. 1907...	2,000,000	.Montreal.
Temiscamingue & Miramichi Mining Co..	14 Dec. 1907....	1,000,000	.Ville-Marie.
The Pontiac Exploitation Co.....	4 January 1908.	100,000	.Montreal.

Companies authorized to transact business in the Province of Quebec, in virtue of the Act 4, Ed. VII, ch. 34.

Names	*Date of the License.*	*Capital.*	*Office.*
The Canadian Portland Cement Co.....	9 March 1905..	$ 1,500,000..	Montreal.
The Calmon Asbestos & Rubber Works Ltd..	24 January 1905	£ 50,000..	Black Lake.
The Booth Copper Co., of Toronto, Ltd.....	7 July 1905....	$ 25,000..	Montreal.
The Canadian Gas & Oil Co.....	11 July 1905....	590,000.	Yamachiche.
Glens Falls Portland Cement Co.....	16 Dec. 1905. ..	500,000..	Montreal.
Jessie Fraser Mining Co. Ltd.....	19 April 1906...	250,000.	Quebec.
International Portland Cement Co., Ltd.....	30 April 1907...	1,000,000..	Hull,
Canadian Oil Co., Ltd.....	17 May 1907 ...	1,000,000 .	Montreal.
The Broughton Asbestos Fibre Co.....	5 July 1907....	500,000 .	East Broughton.
Dominion Metal & Manufacturing Co.	25 Nov. 1907...	150,000..	Montreal.

A certain number of these are working companies, while the others have been organized to develop new districts and even to prospect and have consequently not yet produced any thing.

I append the names of some of these companies. They are repeated moreover under special heads in the course of this report.

There is a small number of companies, which have obtained a Federal charter and which do not appear in the foregoing list.

Mining Companies operating in the North.

Cie des Mines d'or de Pontiac et Abitibi.—Prospecting for auriferous quartz on a mining concession near Lake Opasatica, County of Pontiac.

King of the North.—Prospecting for auriferous quartz on a mining concession near Lake Opasatica.

Cie Minière de la vallé du St. Maurice—Has prospected in the St. Maurice region and is now prospecting for cobalt in the township of Fabre, County of Pontiac.

The Gold Belt Mining & Development Co.—Prospecting on unsurveyed lands on both sides of Lake Opasatica.

The Height of Land Mining Co.—Working on a mining license for molybdenite and bismuthinite on the left bank of the river Keewagama, North Pontiac.

Canadian Exploration Co.—Prospecting in North Pontiac.

Coleman Quebec Mining Co.—Prospecting at Lake Temiscamingue, especially on lot 5 of VIII north of Fabre.

Cobalt Ville-Marie Mining Co.—Prospecting on a mining concession on lots 6 and 7 of V, north of Fabre.

Pontiac Mining & Milling Co.—Prospecting on a mining concession on lot 5 of V north of Fabre.

The Great Northern Gold Fields, Ltd.—Prospecting on the unsurveyed lands in the region of Lake Opasatica and on the river Chibogama.

The Pontiac Exploitation Co.—Prospecting in the vicinity of Lake Opasatica.

The Raven Lake Mine & Development Co., Ltd.—Prospecting on unsurveyed lands west of Lake Opasatica.

Dominion Prospecting & Mining Co., Ltd.—Prospecting to N. E. of Lake Opasatica.

Consolidated Copper Co. of Maine.—Made an important exploration on the river Bell, in 1906 and prospected on the river Kinojevis in Pontiac north in 1907.

Ontario & Quebec Prospecting Syndicate.—Prospecting and exploring on different lands, north of Pontiac, especially near Lake Opasatica.

The Ontario & Quebec Prospecting & Development Co.—Prospecting in North Pontiac.

Frontenac Developing, Prospecting & Milling Co.—Prospecting in North Pontiac.

Temiscamingue & Miramichi Co.—Prospecting on lots 39, 40, 41 of IV of Duhamel.

Railroaders' Mines Co., Ltd.—Prospecting in Chibogomo and North Pontiac.

Davis Consolidated Mines Co.—Prospecting in Fabre and Duhamel.

Manhattan Cobalt Mining Co.—Prospecting at Lake Temiscamingue and in North Pontiac.

The Tilbury & Temiscamingue Silver Mining & Development Co.—Prospecting at Lake Temiscamingue and Pontiac North.

Net Lakes Mines, Ltd.—Prospecting in Chibogomo.

Opasatica Exploration Syndicate No. 1 —Prospecting in North Pontiac.

Cobalt Nugget Silver Co. Ltd.—Prospecting in Fabre.

Jessie Fraser Copper Mining Co. Ltd.—Working with steam plant on the mining concession forming the south ½ of lots 7, 8, 9 of VIIth range North of Fabre.

Northern Quebec Mining & Development Co.—Prospecting at Chibogomo

Chibogomo Gold & Asbestos Co.—Prospecting on mining concessions and other lands at Chibogomo.

McKenzie Trading Co.—Prospecting at Chibogomo.

We have only given the names of the companies, but there is also a large number of private parties who have made important prospects in the regions to the North.

List of Companies in the Province of Quebec in operation, or in position to work, with their addresses.

MAGNETIC SAND

Quebec Iron Ore Co., 75 St. Peter street, Quebec.
H. C. Bossé, 112 St Peter street, Quebec.
W. Robertson, 233 St. James street, Montreal.

CHARCOAL PIG IRON

Canada Iron Furnace Co., (The) Canada Life Bldg., Montreal.
John McDougall & Co., 597 William street, Montreal.

TITANIC IRON

G. Gagnon, 87 Artillery street, Quebec.

OCHRE

Canada Paint Co., Ltd., 572 William street, Montreal.
Champlain Oxyde Co., Lucien Carignan, Three-Rivers.
Thomas Argall, Three-Rivers.

CHROMIC IRON

Black Lake Chrome & Asbestos Co., Black Lake.
American Chrome Co., Black Lake.
Star Chrome Co., Colraine.
Canadian Chrome Co., St-Hyacinthe.

COPPER

Eustis Mining Co., Eustis.
Nichol's Chemical Co., Ltd., Capelton.
J. McCaw, Sherbrooke.
A. O. Norton, Coaticook.
G. E. Smith, Sherbrooke.
A. F. Foss, Lennoxville.

GOLD

Cie des Mines d'or de Pontiac & Abitibi Ltd., Montreal.
C.-A. Parsons, South Dudswell.
Louis Mathieu & Cie., Beauceville.
Louis Gendreau, Jersey Mills.
C.-E. Kennedy, Beebe Plain.
Marsboro Gold Mining Syndicate, Sherbrooke.

GRAPHITE

The Bell Mines, Buckingham.
Diamond Graphite Co., Buckingham.
Buckingham Graphite Co., Buckingham.
Calumet Mining and Milling Graphite Co., Calumet

MANGANESE

Magdalen Islands Development Co., Montreal.

ASBESTOS

Bell Asbestos Co., Ltd., Thetford Mines.
King Asbestos Mines, Ltd., Thetford Mines.
Johnson Asbestos Co., Thetford Mines.
Beaver Asbestos Co., Thetford Mines.
American Asbestos Co., Ltd., Black Lake.
Standard Asbestos Co., Ltd., Black Lake.
Dominion Asbestos Co., Ltd., Black Lake.
Union Asbestos Mine, Black Lake.
Megantic Asbestos Co., Black Lake.
James Reed, Reedsdale.
Broughton Asbestos Fibre Co., Ltd., East Broughton.
Quebec Asbestos Co., East Broughton.
Eastern Townships Asbestos Co., East Broughton.
Frontenac Asbestos Mining Co., East Broughton.
Boston Asbestos Mining Co., East Broughton.
Asbestos Mining and Manufacturing Co., Chrysotile.
Asbestos and Asbestic Co., Danville.
R. H. Martin, New-York, U. S.

Colraine Asbestos and Exploration Co., Ltd., Colraine Station.
Premier Mining Co., Colraine Station.
Beauceville Asbestos Co., Beauceville.
Ottawa Asbestos Mining Co., Ottawa.

MICA

Blackburn Bros., 46 Sussex street, Ottawa.
Wallingford Mica and Mining Co., 41 Duke street, Ottawa.
Wallingford Bros., Ltd., 24 Central Chambers, Ottawa.
Fortin & Gravelle, Hull.
General Electric Co., Isabelle street, Ottawa.
Laurentides Mica Co., corner of Bridge and Queen, Ottawa.
Vavassour Mining Association (E.-F. Nellis,) 22 Metcalfe, street, Ottawa.
Comet Mica Works, 398 Wellington street, Ottawa.
Lila Mining Co., D. L. McLean, 6 Sparks street, Ottawa.
Allan Gold Reefs Co., Ltd., Victoria Chambers, Ottawa.
Webster & Co., 274 Stewart street. Ottawa.
Thomas J. Watters, Metropolitan Building, Ottawa.
Brown, Bros, Cantley.
Lewis MacLaurin, East Templeton.
Richard Moore, Picanock.
Joshua Ellard, Picanock.
Glen Almond Mica & Mining Co., Buckingham.
Kent Bros, Kingston, Ont.
Henry F. Flynn, Maniwaki.
Chabot & Cie., Ottawa.
Gatineau Valley Mica Co., H. H. Moore, Cantley.
C. W. Berry, 424 McLeod St., Ottawa.
Calumet Mica Co., Bryson.
Cawood Mica Co., 38 Spark St., Ottawa.

WHITE MICA

Canadian General Mining Co., Ltd., P. O. Box 253, Montreal.

PURCHASERS OF MICA

Laurentides Mica Co., Ltd. Bridge & Queen streets, Ottawa.

Eugène Munsell & Co., 332 Wellington street, Ottawa.
General Electric Co., Isabelle streeet, Ottawa.
Webster & Co., 274 Stewart street, Ottawa.
F. D. Moore, 354 Wellington street, Ottawa.
Ottawa Mica Co., Hull.
A. Roy Macdonald, jr., 68b St. Urban street, Montreal.

PHOSPHATE

J. F. Higginson, Buckingham.

FELDSPAR

W. A. Allan, Victoria Chambers, Ottawa, Ont.

MAGNESITE

E. J. Watters, 554 Rideau St., Montreal.

KAOLIN

F. R. Lanigan, 23 Côté street, Montreal.

TALC

C. V. M. Temple, 175 Spadina Road, Toronto, Ont.

SULFATE OF BARYTA

Canada Paint Co., 572 William street, Montreal.

COMBUSTIBLE NATURAL GAS

Canada Gas & Oil Co., Three-Rivers.

PEAT

Imperial Light, Heat & Power Co., Ltd., Liverpool, London & Globe Building, Montreal.

SLATE

Rockland State Quarry, New Rockland.

FLAG STONES

F. R. Bishop, Bishop's Crossing, Co. Wolfe.

CEMENT

International Portland Cement Co. Ltd., Hull.
The Lakefield Portland Cement Co. Ltd., Pointe-aux-Trembles.
Vulcan Portland Cement Co. Ltd., Longue Pointe.

GRANITE

Stanstead Granite Quarries Co., Ltd., Beebe Plain. Co. Stanstead.
S.-B. Norton, Beebe Plain.
James Brodie, Graniteville, Co., Stanstead.
The Whitton Granite Quarry Co., St-Victor de Tring.
M. Fitzgerald, Sainte-Cécile, Co. Compton.
Fortunat Voyer, Rivière à Pierre, Co. Portneuf.
Joseph Perron, Rivière à Pierre.
M. P. Davis, 48 Central Chambers, Ottawa.
The Laurentian Granite Co., Ltd., Montreal.
J.-A. Nadeau, Iberville.
Montfort Granite Co., Ltd., Montreal.

BRICKS.—(The principal companies)

Thos. W. Peel & Co., Montreal.
J. Brunet & Cie., Montreal.
Chs. Sheppard & Son, Montreal.
Joseph Bernier, Montreal.
Joseph Descarrie, Montreal.
Laprairie Brick Co., Ltd., Laprairie.
Narcisse Blais, Quebec.
Paradis & Létourneau, Quebec.
Laliberté & Fils, Saint-Jean Deschaillons, Co. Lotbinière.
Victor Charland, Saint-Jean Deschaillons.
D.-G. Loomis & Son, Sherbrooke.
The Eastern Townships Brick and Manufacturing Co., Lennoxville.

LIME. –**(The principal companies)**

Dominion Lime Co., Sherbrooke.
Cyrille Gervais, Montreal.
Olivier Limoges, Montreal.
Montreal Lime Co., Montreal.

BUILDING STONE

The Terrebonne Quarry Co., St. François de Sales, (County of Laval).
The Louis Labelle Quarry Co. Ltd., St. François de Salles.
Joliette Limestone Quarry, Co., Joliette.
Standard Lime & Quarry Co., Joliette.
Frelighsburg R. & Quarry Co., Philipsburg, (Mississiquoi).
Harrisson Quarry Co., Montreal.
Dominion Quarry Co., Montreal.
O. Limoges. Montreal.
Grondine Stone, Lime & Brick Co., Three-Rivers.

Companies using certain products of the mines to be manufactured in this province.

The Electric Reduction Co. Ltd., Buckingham (ferrochrome and phosphorus).
The Chemical and Fertilizer Co., Buckingham (Superphosphate).
Electro Manganese Reduction Co., Shawenegan.
Standard Chemical Co., Coaticook (Acetate of lime).
The Standard Drain Pipe Co. Ltd., St. Jean d'Iberville.
C.-E. Dubord, Beauport, (Refractory clay).
Geo. Bélanger, Beauport, (Refractory clay).
The Montreal Terra Cotta Co., Ltd., Maisonneuve.

EXPLORATION NORTH OF PONTIAC

As a sequel to my exploration of last year, I this year visited the same region, but by following different routes.

I went from Ville-Marie to North Temiscamingue by the road in the surveyed Townships and then by the portage known as the Klock road to lake des Quinze. This road, which is 14 miles long, is in a very bad state ; still provisions can be conveyed over it in carts.

I took the canoes at the Klock farm as far as the Obikaba portage and ascended lake Opasatica to the height of land ; before reaching there I turned to the west by the Bay and went to Larder lake (Ontario), passing by way of Raven lake in order to study the formations in which gold is said to have been found and to compare them with those of the Province of Quebec. Returning by the same route, I examined in the neighborhood of the height of land some prospects to which I shall again refer. Beyond the height of land, I traversed lake Obadowagasking, which we shall now call " lac des Iles ", descended the river Kanasuta, crossed lake Agotavekami, the river Abitibi, the lake of the same name, the river Amitikik, lake Makamik, lake Lois, a portage of 5 miles from the height of land to the river Nawapitechin which I descended, river Keewagama and lake of the same name to the river Keekeek, thence by that river and lake Long to the river Kinojevis, which I descended, as well as the Ottawa river by traversing lake Expanse and lake des Quinze to the Gillies farm and thence to Ville-Marie, covering in all a distance of about 500 miles.

I examined the rocks and visited the prospects along this route and I append some details on the observations made.

The map annexed to this report is the reproduction of that of last year with additions and corrections.

From Ville-Marie to North Temiscamingue, the road follows the low, fertile grounds, so that I had no occasion to examine the rocks. Near the latter village and on the river itself I visited some prospects made on pros-

pecting licenses. The rock is a variety of dioritic quartzite traversed by veins of quartz in which small quantities of copper pyrites and molybdenite are visible. At one point a shaft of 20 feet deep and another of 10 have been sunk, while some few holes have been made here and there, but the mineralization does not seem to have developed at any point. Following the Klock road, out-croppings of rocks generally granitic and presenting no special interest or indication of economic minerals, are met with. Moreover the Huronian formation, observed on the banks of lake Temiscamingue, does not appear to extend further to the east than lake des Quinze and going north it is hardly noted in a permanent way before reaching the environs of the height of land, the few indications of Huronian rocks observed to that point being rather in the nature of spurs into the Laurentian mass. As far as the lake Obikoba portage, we have on the west bank the fertile lands of the township of Guerin and toward the east mountains of granite and gneiss are visible, which continue in that direction and which I found as far as the Ottawa river. Following lakes Obikoba and Barriere, granitic hills of the same formation are seen on both sides as far as the Lonely river. This river flows in low lands free from rocks and showing on both sides good clay soils, which appear to be the continuation of the good lands of the township of Guerin. At the end of this river, there is a bay with low-lying shores and the same kind of land on both sides. We then enter Long lake, whose shores consist of gneiss and granite hills of a hundred feet in height and covered with a mixed forest growth, while the land on both sides continues to be made up of undulating hills. This lake has a width of 6 to 800' and at Polson strait it narrows to 60 feet, then widens out for $\frac{3}{4}$ of a mile, with lower shores towards the east and higher and more granitic ones towards the west. Next to the east a deep bay is passed and, after a couple of miles, the great sheet of water forming Lake Opasatica is reached. Before passing the point preceding the bay to the west, I observed some talcose and chloritic schists, then a small granite outcrop and again the same chloritic rocks which seem to belong to the Huronian formation. I went westward to the head of the bay, where I found a camp of prospectors of the "*Raven Lake Mine & Development Company.*" The rock at the head of this bay is of quartzite : the prospects consist of several small shafts of 10 to 20 feet on a vein of quartz, which has a pretty large development and in which I noted good indications of chalcopyrite. From the deepest shaft some 20 tons of ore holding a fair proportion of mineral, have been taken out, the whole capable of yielding approximately 4 to 5% of copper The work

was done during a part of the season with 5 or 6 men. Specimens of the quartz which I have had assayed gave me no indications of gold.

As I was only at a short distance from Larder lake in Ontario, where gold was found in the quartz, I visited that region to examine the rocks and compare them with those on the Quebec side.

On leaving lake Opasatica, the journey to Larder Lake city at the western end of that lake may be made in one long day's travel without a load, the road being moreover easy and the portages well marked. If the lake is reached in the morning, the steamer which runs regularly there, may be taken advantage of.

On leaving lake Opasatica, a portage of half a mile is immediately taken, which leads to a small brook forming the discharge of a little lake with low-lying shores, which I called lake Nenuphar. The portage passes over a hill of quartzite in which are found the cuprifrerous veins above mentioned : then follows swampy land leading to a crooked brook about 10 feet wide which leads to the lake, the latter being encircled by low clay lands covered with spruce and small pine. At the end of this lake a brook of the width of a canoe is followed for a few hundred yards and then a portage of about three quarters of a mile running over a hill of about 100 feet high and forming the watershed between Lake Opasatica and the river Blanche : this hill is composed of quartzous gneiss apparently Laurentian and bare to the summit. The portage leads directly to a lake which I named lake Gneiss. In fact, it is entirely surrounded in the north-east part by hills of that rock and towards the south-west there is a deep bay of a very picturesque aspect, whose sides are formed of perpendicular rocks of reddish gneiss ranging to sixty feet in height

At the extremity of this lake, a small river is followed, which becomes obstructed by big boulders where a small portage of about sixty yards to the left has to be made Then a large swamp is met, through which the brook winds. When I passed there on the 15th August, there was about the width of a canoe on which one could just float without a load. However the portage may be made by avoiding this brook and following the hill to the right and part of the swamp. In either case at the end of the swamp there is a portage of a few hundred yards which leads to Birch lake. This lake is pretty large and in the north-eastern part granite is seen.

To the south-west, it narrows into a passage filled with boulders, then forming a small bay, at the head of which a portage of about 300 yards is taken passing over boulders of gneiss and diorite and leading to Turtle lake

This lake at first forms a body of water three quarters of a mile long towards the south-west where it narrows and afterwards widens, running towards the west. In the first part one sees gneiss at first, then, on the left, quartzite, conglomerates, and finally a considerable development of compact slatey schist which one afterwards sees on both sides as far as Raven lake. These schists contain a large number of quartz veins which sometimes concentrate into larger veins. Several of these veins have been prospected on both sides of the lake and slight excavations have been made. This quartz sometimes contains a fairly large quantity of chalcopyrite and bornite. At the time of my visit there was a group of prospectors there who had recognized copper ore at several points. They even claimed that some samples had yielded gold on being assayed and I saw some analyses mentioning it. The small samples I had assayed, yielded none. I observed a little native copper at a point where the black schists were.

The two sides of this lake consist of wooded hills about a hundred feet high and apparently of the same formation of black schists that I observed as far as the Ontario boundary, about the 35th mile and to the south on Fish lake. To reach that lake, which discharges into Turtle lake, one follows a portage a third of a mile long which winds over a high hill of compact schist and quartz ; then comes a small lake and at the end, by a portage of some thirty yards on a small island, one reaches Fish lake. It is about three miles in length from north to south and one mile from east to west, and is surrounded by hills from 100 to 250 feet high covered with fine timber. There are only two small islands on the east side formed of schists similar to that of the region. A little prospecting has been done, but I found no industrial mineral there.

To sum up, the whole of that Turtle lake region presents a formation of black schists or slate, analogous to that which characterizes the lower Huronian formation, and containing many veinlets and veins of quartz in which chalcopyrite and a little bornite are found scattered. I did not observe any gold, but it is not improbable that those copper ores may contain some. This region is rather interesting and justifies the prospects that are being carried on there.

Turtle lake connects with Raven lake by a small portage on the left, situate about 400 feet to the east of the interprovincial boundary line. I proceeded there by that route and, after a couple of portages, got to Larder lake which I crossed to reach Larder city at its western end. I visited some prospects in its vicinity and, at the same time, I examined the rocks along the way. I will not express any opinion on this district, nor will I give any details regarding those rocks, but will refer to the report published by Mr. R. W. Brock in the XVIth report of the Ontario Bureau of Mines.

In that report, he says that the gold-bearing rock is a ferruginous dolomite mixed with quartz and green schistous rock, probably of a serpentineous nature. That rock, especially when intersected by porphyritic dykes of pegmatite, is traversed by numerous threads or small veins of quartz which are sometimes auriferous. Mr Brock says that that rock is an altered ferruginous dolomite of sedimentary origin and he considers that it belongs to the Keewatin formation.

I call attention to the fact that this formation continues towards the north-east in the Province of Quebec and is similar to that found to the north of Lake Opasatica in which gold has also been found.

Having obtained the information I needed at Larder lake, I returned by the same route to lake Opasatica where I visited several prospects in the vicinity.

Following the western shore of that lake, one sees gneiss, which near the first bay turns to quartzite; at one point where there seems to be a contact between the two formations, a prospect has been made on a belt of calcite in which iron pyrite and a little copper pyrite is seen.

Along the shore there is chiefly a kind of quartzite in which are well defined quartz veins which had been prospected at the time of my visit and in which it was claimed that gold had been seen. The same formation with quartz veins is also seen on the other side of the lake. I saw no gold myself and the small samples I had assayed did not yield any either.

At the head of lake Opasatica, the Revillon Brothers Company, Limited, established a supply store last year for prospectors and I learned

from the person in charge of the store that several groups of prospectors had obtained supplies there during the season. From that post a good winter portage two and a half miles long leads to the *Cie des mines d'or de Pontiac and Abitibi.*

It was on this property, comprising 400 acres, that indications of gold were found in July 1906 by Messrs Ollier and Reneauld as I mentioned in my previous report.

I visited this property again and found that very good prospects had been made during the year, consisting in the discovery of numerous veins of quartz from a few inches to several feet in width, on which shafts from 15 to 20 feet deep had been sunk.

I was shown pieces of quartz containing gold, taken from those veins and, as stated last year, by washing the earth and debris around several of those veins, I found fine colors of gold, especially at the shaft where the discovery was made near lake Fortune, the rock there having a certain analogy to that of Larder lake. The general formation of this region is greenish dioritic schist, fairly compact and quartzous, traversed by veinlets and veins of quartz which do not seem to have any special direction. South of lake Ollier is a considerable development of very hard, reddish porphyritic rock. These same eruptive rocks are also met with after crossing the height of land on the eastern shore of lac des Iles.

The company has built a camp on lake Ollier and a stable in which were two horses. Five or six men were employed there during the season. I took several samples of quartz which I had assayed and which yielded no gold Some of those veins contain a little chalcopyrite.

North of this property is a concession of 200 acres belonging to the *King of the North Company, Ltd.* No work was being done at the time of my visit. They had begun to put up a small camp and had made some excavations towards the west on the shores of lake King of the North. This work was done on quartzous masses and I again observed, on a point near the camp, a rock analogous to that of Larder lake.

Prospects have also been made to the east of those two concessions and the interested parties claim they have found encouraging indications.

Other prospects have been made on the two foregoing properties by *The Great Northern Gold Fields Company*, under several prospecting licenses controlled by it.

The geological conditions are comparable to the others, and several excavations have been made on veins of quartz where I am told gold has been found, but I saw none. I observed a formation of green rock exactly analogous to that at the Harris Maxwell and Richardson mines, Larder lake, and which have been mentioned by Mr Brock as being a characteristic of the gold-bearing rocks of that region.

To sum up, my opinion on this district is the same as that expressed in my report of last year. There is a mass there that I called conglomerate, but which Mr. Brock calls silificated dolomite, mixed with schistous serpentine and which is in contact with a schistous quartzous diorite, also traversed by quartzous veins in some of which a little gold has been found. This region is traversed by eruptive masses containing the elements of granite, but which I called porphyry because of the compact state of the feldspar.

I am not yet in a position to express an opinion as to the future of this district before more extensive work has been done and assays made in the mills, but the prospects already made on the land held by the company of Pontiac and Abitibi would justify a certain amount of expenditure for that object.

Starting from the Revillon Post and proceeding towards the north, I got to Summit lake by a portage of 900 feet over compact, dioritic rocks. At the end of the lake is the portage of the height of land, three quarters of a mile long. This height of land is an elevation of about 60 feet, formed of gravel. Last year I washed some of the surface gravel, but with no results. This year I dug a hole a couple of feet deep and by washing with a pan, I found a slight color of gold. I do not think it would even pay to work this gravel for gold. However, this slight discovery is interesting for the whole district.

I afterwards crossed lake Tomini which is surrounded by dioritic hills, towards the north.

On the east shore I observed a quartzous vein with iron pyrite in a quartzous diorite. The land becomes more level and the lake ends by a river winding through a swamp and communicating on the right with lake Gordon which contains several islands and is surrounded by hills. It is probable that when the water is high this lake forms but one body of water with the northern part of lake Tomini and its discharge. The hills around this lake are dioritic and in a bay at the north-western end, I found an out-cropping in which a small vein of calcite and quartz containing a little chalcopyrite can be seen.

From that lake one can proceed by the river and without a portage to lake Obadowasking, now called lac des Iles. At the south-eastern end there is a deposit of iron pyrite that has been worked to a slight extent.

Further north, following the east shore, is an out-cropping of porphyritic rock similar to that found near lake Ollier. Further on is a deep bay whose shores and islands consist of compact diorite.

While crossing the lake I observed that the many islands and the hills of the shores were formed of a light colored and hard rock which is practically quartzite. The discharge of that lake is the Kanasuta river which flows northward with a fairly considerable width between dioritic hills for a couple of miles as far as a rapid, the first of a series of three, very close to one another and called the Three Portages Rapids. They are not over three fourths of a mile in length ; they are avoided by portages and it does not take over an hour to cross them. The first two flow over dioritic boulders and the third over green diorite which breaks easily. The river is about a hundred feet wide and is rather deep in the still water.

The river continues to flow northward winding between high rounded hills of diorite and about two miles below the last rapid, on the right, is a vein of calcite which I mentioned last year and where a slight prospect has been made showing a little chalcopyrite and green stains of carbonate of copper.

From the top of this hill, which is about 150 feet high, one sees on both sides a series of similar rounded hills running towards the north-west and south-east. Following the river, one comes to a small fall dropping on quartzous diorite ; it is about 6 feet high and 20 feet wide, and might supply a small water-power. The portage is on the right. The river leads to

the great lake Agotavetami which I crossed. The rocks surrounding it are at first quartzite containing pyrite of iron and copper, then diorite, conglomerates and talcous rocks. Following the discharge of the lake one comes to the Dancer rapid which is avoided by a portage on the right over quartzous diorite and which might supply a fairly good water-power ; then one continues without interruption to Lake Abitibi. For further details regarding this part of the journey, I refer to my report for last year. On the right, a little beyond the portage, I found a small vein of quartz in the diabase where a slight prospect has been made.

When at lake Abitibi, near the Revillon post, I learned that some prospecting had been done towards the spot where I had found a little gold last year but that, with the exception of a few slight colors, nothing of any commercial importance had been found.

After doubling the point of the Hudson Bay Company's post, I crossed the lake in a north-easterly direction to the Amitikik river which I ascended as far as Moberly's post, having crossed, a mile before, the line of the Transcontinental railway which in this region runs through good clay land remarkably level as may be seen by the plan of the line.

Mr. F. Moberly is an engineer of the Transcontinental who, last year, built a small camp and cleared a little piece of land. This year, he is building a large house and extending the clearing. He has planted grain and vegetables, also fruit trees, with very good results. I passed there on the 20th August and they were gathering potatoes sown on the 20th June ; they also had salad, radishes, beet-roots, carrots which had done very well, apple and plum trees and ornamental plants such as sun flowers, which were also flourishing. This post is 16 miles from the Hudson Bay Company's post and 10 miles from the mouth of the Amitikik river which, so far, has not much current, is fairly deep, a couple of hundred feet wide, and runs through a generally flat country fairly well wooded with black spruce, banksian pine, white birch, large poplar and a little grey spruce. The soil is clayey and on its banks only a few outcroppings of quartzous diorite can be seen. Lake Abitibi is shallow and the Eastern bay that I crossed is shallow and covered with grass.

To the east of Moberly's Post is a little river which I did not visit ; it winds through clayey land without obstruction for a distance of several

miles in a direction parallel to the line of the Transconfinental. In front of Moberly's post is a large flat island. The Calamity river runs to the north-west, while the Amitikik river turns to the north-east and continues in an easterly direction on a width of about 150 feet, with but little current and a few falls. At a distance of about a quarter of a mile is a first fall some twelve feet high which is avoided by a portage on the right about 300 feet long. This fall drops on diorite partly compact and partly schistous. It might furnish a small water-power.

A mile further on is a small rapid up which canoes are hauled with ropes ; then a couple of miles beyond is another fall which is avoided by a portage on the right 500 feet long. It falls from a height of about fifteen feet through three openings in the rock and might be used as a water-power. The rock itself resembles the diabase observed in other parts of the region and there a few small threads of quartz can be seen. Ascending the river one finds flat, clayey land on both sides. I noticed on the left side a small river about thirty feet wide which flows several miles without any obstructions but overturned trees. I also followed for a certain distance the nine mile portage leading to a branch of the Haricanaw river. The third fall, about thirty feet high, is three miles further on and is avoided by a portage on the left, 300 feet long. The rock consists of diorite with small veins of quartz, intersected by dykes of what I called porphyry on account of the compact condition of the feldspar of which they are formed. At the head of the fall there are also boulders resembling syenite.

A little further is a rapid avoided by a portage on the right 250 feet long and canoes can also be hauled up with ropes ; a little further still is another small current up which canoes can be paddled. These rapids flow over diorite and granite boulders.

The land continues flat on both sides and on the left are two little rivers, one of which leads to Otter lake where some slight prospects have been made. I did not go there, but obtained the following information. The rock seems to be diorite in which pyrite of iron is said to have been found and on both sides of that lake there are granite hills. To get there one has first to cross a portage on the right, a mile and a half long through a swamp ; then there is a stream, lake Rest, another stream, then a portage of a mile and a quarter over a divide, leading to a small lake whence a portage of three

quarters of a mile leads to the inlet of lake Otter ; then come five miles of river and a short portage leading to Otter lake.

Leaving to one side the road to Otter lake, the Amitikik, river continues for about 3 miles through flat Land to lake Makamik which forms a great sheet of water with several deep bays, surrounded by hills; there are also several islands in it. The rocks I examined at the north and south ends and on the islands while crossing the lake, consist of quartzous diorite with very hard porphyritic dykes. However, I found on some islands in the southern part of the lake, a green and rather soft rock resembling serpentine.

At the southern extremity the land becames flat and the line of the Transcontinental is crossed.

The Molesworth river runs through good, level, clayey soil, fairly well timbered as far as the first portage, about 8 miles. There are two other rapids not far from the first and all three are avoided by portages : the first on the left, over quartz ; the second on the right and the third on the left over boulders. These portages are short and the rock met with is diorite.

A little further is another rapid which is avoided by a portage on the right, 1000 feet long, the rock being diorite. Four miles beyond is a fall 35 feet high, avoided by a portage on the left over diorite. This fall could be used as water-power. The soil continues good. Then there is a large swamp and the river which was from 150 to 200 feet wide, opens out from 250 to 300 feet as far as lake Lois. At the entrance of this lake are quartzous schists and quartz where a little prospecting has been done. At the head of the bay to the west, is a large bare hill a quarter of a mile long, 300 feet high and consisting exclusively of quartzous diorite. Its surface has been burned over and is reddish in color.

Lake Lois is about eight miles long from west to east ; it is made up of a series of widenings with bays more or less deep, and narrows ; there are also some islands in it. The rocks I noticed are generally quartzous diorite. However, towards the middle of the lake on the north side, I saw a mass of conglomerate and a little calcite. In the north-eastern part, a bay two miles deep is followed by a portage of half a mile, leading to a small lake discharging into lake Robertson. This bay is surrounded

by hills of little height, cut perpendicular in some places and consisting of hard diorite which sometimes presents a schistous aspect.

At the eastern end of lake Lois is a small stream leading to the height of land. The latter is crossed by a good portage, five miles long, to the head of the Nawapitechin river, forming the northern branch of the Kinojevis river. This portage is on clay at both ends and rises gradually towards the centre over rocky outcroppings consisting exclusively of quartzous diorite, either compact or schistous with small veins of quartz. This land seems to have been gone over by prospectors ; it is covered with small timber rather scattered, wherein banksian pine predominates.

The Nawapitechin river winds through level country, fairly timbered, whose soil is clayey. That river which is about twenty feet wide at first is fairly deep with a rather weak current as a rule ; no rocks are seen in it except in the lower portion where there are some outcroppings of quartzous diorite. The river makes great bends, abruptly changing direction from north to south with many small turnings : its general direction, however, is eastward to the point farthest north, when it runs to a general southern direction until it meets the Kinojevis river where it widens to 50 and 100 feet. In the upper portion are points covered with Indian hay ; the land is flat, clayey and very suitable for cultivation. About the middle of the river are some small rapids, only two of which have to be avoided by portages. The river in the northern part runs quite close to the line of the Transcontinental ; then it passes near *cache* No. 9 of that company. Its total length is not less than thirty miles owing to all its windings. It runs chiefly through arable land except at the few rapids where diorite outcrops.

After joining the Kinojevis river, the route is southward by the Keewagama river flowing very straight through fine clayey land, well timbered, to the first rapid where the rock crops out. There is a second rapid a mile higher up and between the two is a rather considerable development of pegmatite which I examined and which has been prospected by *The Height of Land Mining Company.*

The width of the river at that point is 90 feet and from the first rapid there are on both sides hills of gneiss mixed with veins of pegmatite showing a little mica, but in which sheets of molybdenite are frequently seen. The company has taken out a mining license on the west side and,

a little above the first rapid, has sunk a shaft which was 35 feet deep at the time of my visit on the 1st September. The shaft first cuts through a vein of pegmatite, 6 feet thick, and afterwards another at the bottom.

These veins, wherein quartz predominates, have an east and west direction and seem to cross the river. Molybdenite in crystals and in masses is found in fair abundance in it, also bismuthinite or oxyde of bismuth in fairly considerable quantities and native bismuth. These minerals seem to be regularly scattered throughout the mass. A little chalcopyrite and native copper are found more accidentally and only in small quantities. Accompanying the pegmatite some crystals of a yellowish mineral are also found which seems to be beryl.

Molybdenite and bismuth appear to be the minerals the company wishes to mine for and it is preparing to develop its works by sinking the shaft deeper and running drifts at the bottom in the direction of the veins. It is impossible to give a definite opinion regarding the value of this prospect, but the presence of those minerals in fairly abundant quantities is an encouragement to continue the work.

Outcroppings and rounded boulders of this pegmatite, showing molybdenite, are found on both sides of the river and below the first rapid. A considerable development also exists on the large peninsula of lake Keewagama.

After leaving the Keewagama river, I crossed the lake of the same name and examined the north point of the peninsula where schistous diorite is observed with boulders of granite, diorite and talcous rock. I afterwards followed the east shore of the lake towards the south ; there is diorite there with many crystals of hornblende and crossed by veins of pegmatite a few inches wide. A little further, talc is found, and further still a large granite dyke, running east and west, which continues to the line of the 50th mile traced by Mr H. O'Sullivan where the diorite is met with again.

Some prospecting has been done in this region and several veins of quartz are mentionned. Following the south shore of the lake, granite and diorite are found, then a black, compact and very hard rock, of semi-metallic aspect, crossed by dykes of yellowish porphyritic rock where the prospectors fired some blasts which had only a slight effect on that rock.

Further on are clayey schists similar to the slate already mentioned near the Ontario boundary. Continuing, one finds schistous diorite with small quartzous threads running through the rock. After passing the narrows leading to Indian Bay, I followed the shore of the peninsula where there is a coarse-grained rock whose basis is hornblende and which I called syenite ; then I came back to the entrance of the Keekeek river where similar rock is seen.

On both sides of Lake Keewagama, the land is generally undulating, timbered with grey and black spruce, poplar and white birch with a little cedar on the shores. There are some pine trees on the peninsula. The soil is clayey, especially in the southern part where the land is flat and more suitable for farming.

I ascended the Keekeek river which is easily navigated as far as the lake of the same name.

The land is fairly level and rock is met with only at the single portage on that river ; the rock is schistous diorite.

Lake Keekeek is surrounded by rocks consisting of schistous diorite and of another kind resembling slate. In the north-western part there is a rather considerable development of talcous schists. I afterwards entered a river on the south which is practically the continuation of the Keekeek river ; it is fairly navigable to the portage on the left, about 500 feet long. There are but few outcroppings of rock which is chiefly diorite. From that portage to Long lake the river is very crooked and difficult to navigate, being full of obstacles and fallen trees, sometimes being barely wide enough for a canoe to pass or to turn. Many travellers proceeding to lake Keewagama, prefer taking the route by the Kinojevis river, although it is longer, to avoid this difficult passage. To go four miles in a straight line with 2 experienced men, it took five hours of hard work although the canoe was lightly loaded. The Transcontinental voyageurs who at first followed this route to get to the line have now abandaned it.

On the shores of Long laks are rock outcroppings consisting of compact diorite and granite.

From this point I had to hasten my return to Ville-Marie owing to an

accident to one of my men. I have, however, already spoken of this region, through which I travelled in the opposite direction in 1906, in my report for that year.

The formation, as far as Gillies' depot in Baie des Quinze, is Laurentian and the rocks in sight are granite with dykes of pegmatite and coarse-grained gneiss in which epidote is very abundant.

From Gillies' depot to Ville-Marie one sees along the road outcroppings of granite and a rock resembling coarse-grained diabase, then come the cultivated lands of the Temiscamingue region to Ville-Marie.

This report is accompanied by a second edition of the map of North Pontiac, published last year, containing further information and indicating the proposed townships in the region through which the Transcontinental will run.

Surveyed Townships of Lake Temiscamingue.

I visited some of the more important prospects of that region and I give the result of my observations below.

A geological map on a scale of two miles to the inch has been published by Mr. Morley E. Wilson of the Ottawa Geological Survey and the report to accompany it is being made out.

Fabre II. 25. A shaft about thirty feet deep has been sunk, following a small vein of calcite which, on the surface, showed pink arseniate of cobalt (cobalt bloom). This vein became mineralized as it went down and I found smaltite and nicolite analogous to the Cobalt ores in it, but I saw no silver. The rock, which I called gabro, is made up of coarse elements and forms a wide point extending between Lavallée and l'Africain bays.

Indications of cobalt bloom are also seen on the neighboring lots, espe cially on lots 36, 37 and 38 and on lots 31 and 32 of the same range.

II. 37. On this lot a shaft which is now 60 feet deep, has been sunk in the same rock and a vein, a couple of inches wide, of smaltite and nicolite has been struck.

II. 31. A shaft has been sunk on indications of cobalt bloom, but it was full of water at the time of my visit and I do not know what has been found.

Fabre II. 32. A shaft 35 feet deep showed smaltite which, on assay, yielded a very small proportion of silver.

III. 31. Indication of galena.

IV. 26. A thick vein of calcite with galena in fair abundance, blende and pyrite of copper.

V. south 7 and 8. Chalcopyrite in calcite.

VI. south 3. do

VII. south 5. do

V. north 3. A shaft has been sunk and a vein of calcite found with smaltite and nicolite ; the assays showed a good proportion of silver.

VII North 9 (south ½). On this lot, the property of the Jessie Fraser Copper Mining Company, work of rather considerable importance has been done, consisting of two shafts 60 and 90 feet deep, with about 150 feet of drifts, during the past two years in a dioritic mass containing chalcopyrite scattered in pyrothite. The company has put up steam machinery with the intention of continuing its prospects.

Duhamel VIII 5. Fairly extensive prospects have been made on this lot on a vein of calcite in which cobalt ores were afterwards found.

IV. 39. A shaft has been sunk and prospects of some importance prosecuted on a vein which is claimed to be gold bearing.

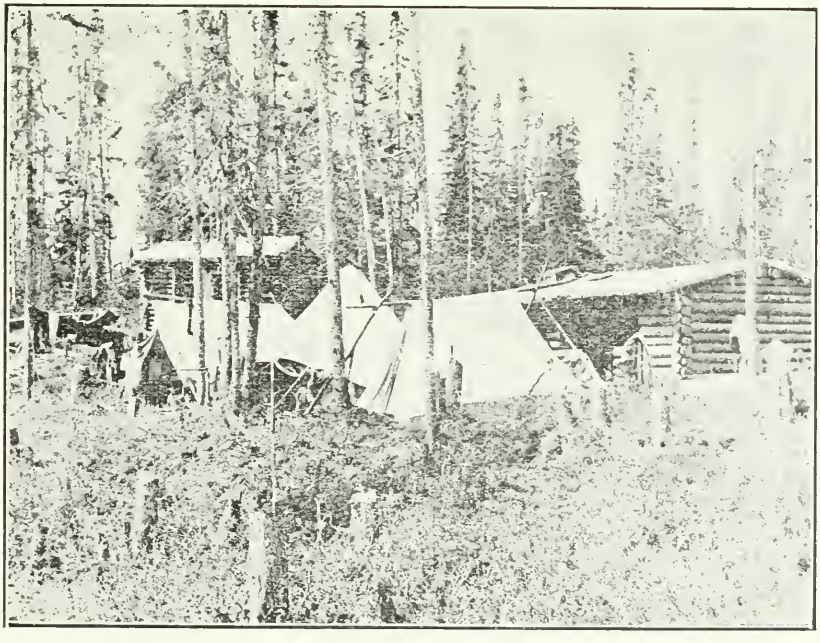
I mention only the more important prospects, but I visited a certain number of others in which slight indications of ores, copper ores especially, had been found. Prospecting will be continued at the places where cobalt and nickel ores have been found.

Rumors spread throughout the country that native silver had been found, but so far I have not been able to establish the truth of such statements to my satisfaction.

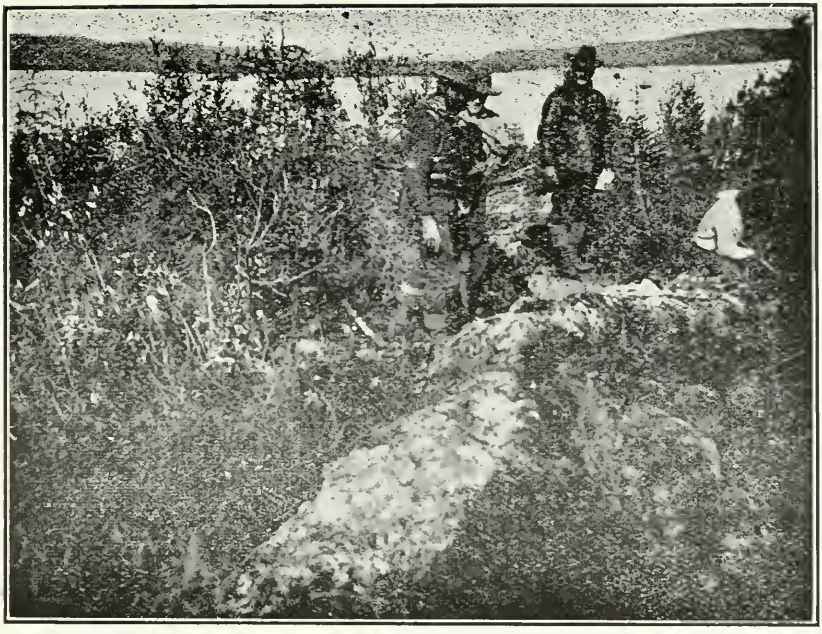
Capt. Machin's winter exploration party (1906-07) on the Chibobiche river.

Capt. Machin's winter exploration party (1906-07) crossing Lake Chibogomo.

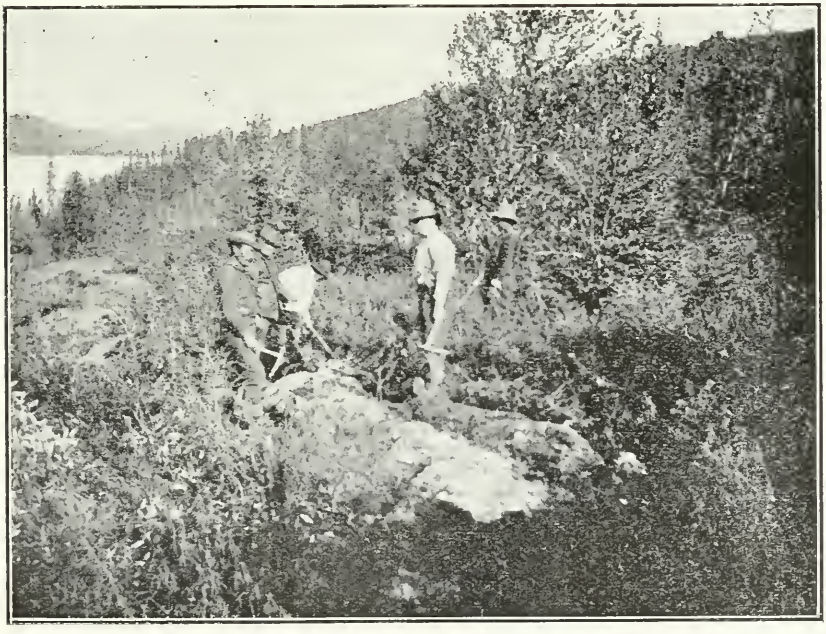
Capt. Machin's winter exploration party (1906-07) on Lake Chibogomo.



Capt. Machin's camp near Lake Doré.

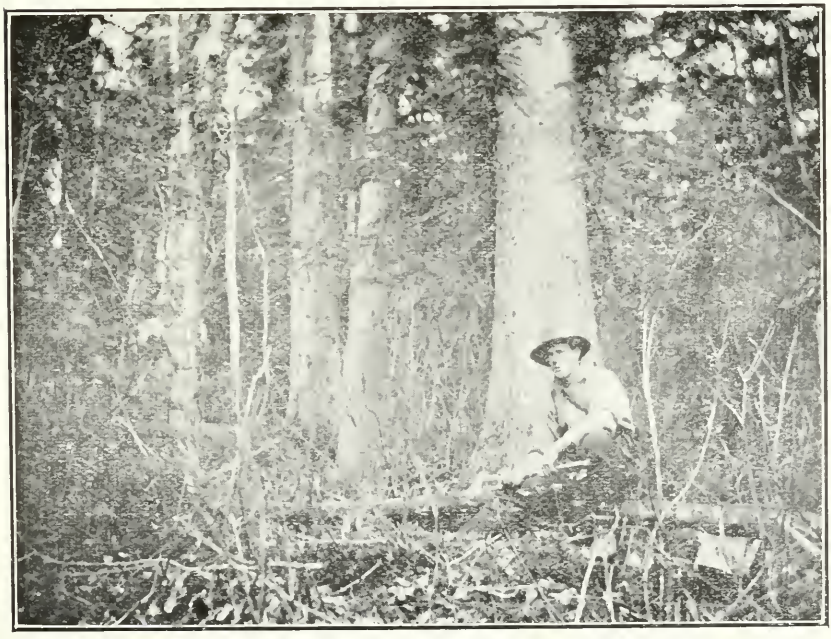


Out-cropping of Gold-bearing Quartz on Portage Island
(Lake Chibogomo.)

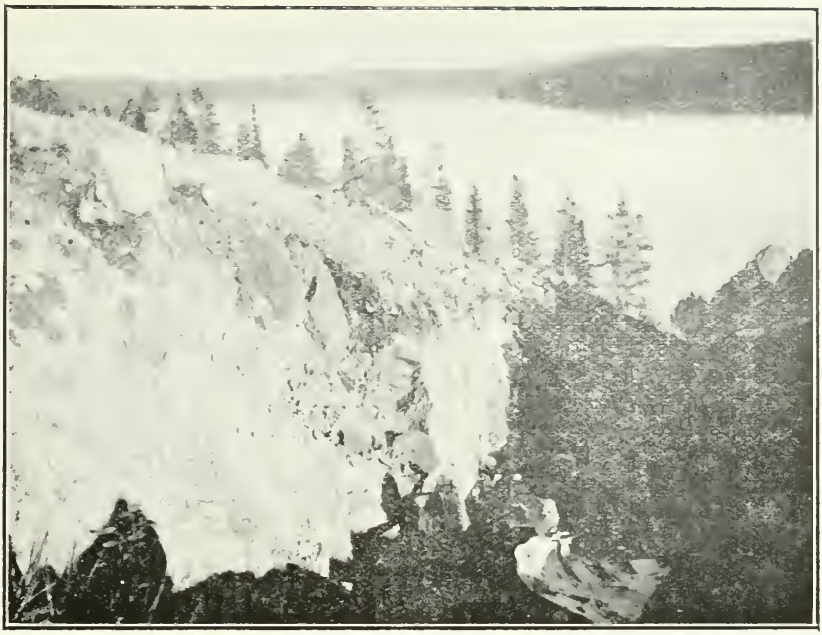


Other out-cropping of Gold-bearing Quartz on Portage Island
(Lake Chibogomo.)

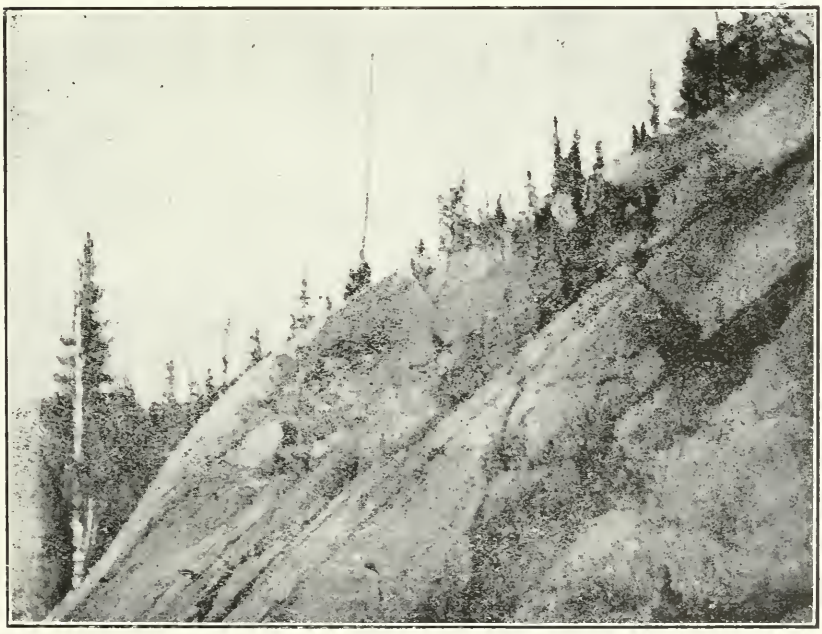
McKenzie Bay, Lake Chibogomo looking towards the South.



White spruce trees on Sorcerer Mountain (Lake Chibogomo.)



Prospect on the serpentine of Asbestos Island (Lake Chibogomo.)



Prospect on the serpentine of the Narrows of Lake Chibogomo.

CHIBOGOMO

Explorations were made during the summer of 1906 by various persons, either on their own account, or on behalf of syndicates controlling prospecting licenses in that region.

The reports received from prospectors confirm the opinions already expressed by the experts who have visited that region, but, owing to the difficulty of access, it must be admitted that no mining can be carried on unless a railway is built.

During the winter of 1906-07, the Department of Lands and Forests sent Mr. John Sullivan, P. L. S. who traced the outer lines of several townships in the region the most prospected around the lake and who also scaled the Rapid river. The report on his exploration is published in the report of the Department of Lands and Forests (1906-07).

The photographs accompanying the present report were supplied by Messrs. H. A. C. Machin and F. McKenzie.

We publish a map of that region showing the new surveys. Prospectors will now find on the ground guiding marks that will enable them to accurately locate their licenses and it has been decided to divide those townships into blocks a mile square which will be granted on the usual conditions of prospecting licenses.

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UNEXPLORED
UNEXPLORED
BROCK RIVER
Ast. North
KAWASACHUAN RIVER
CHIBOGOMO-GOURBEAU RIVER
SWAMPY
BLAIKLOCK
DEVLIN
McKENZIE
CHIBOGOMO RIVER
LITTLE RUSH LAKE
RUSH LAKE
LAKE GOURBEAU
LAKE OPEMISKA
Schist & Conglomerate
Gabbro
Granite
Portage
Chute
Stone Boundary
Copper Gold
1060
1064
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1032
1072
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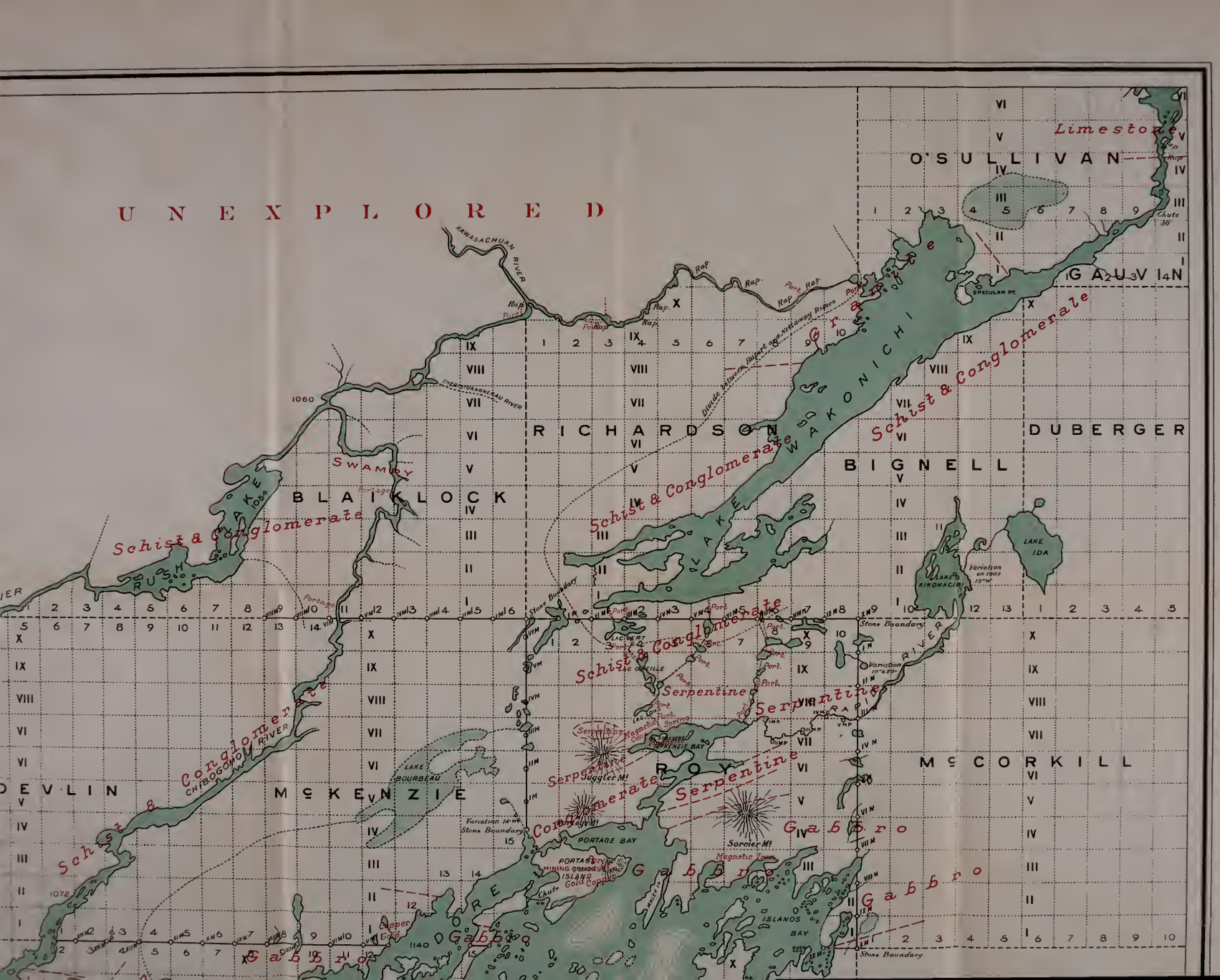
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GAUVIN
RICHARDSON
DUBERGER
BIGNELL
BLAIKLOCK
DEVLIN
McKENZIE
ROY
McCORKILL
LAKE WAKONICHI
LAKE BOURBEAU
LAKE IDA
LAKE KIKONACIBI
RUSH LAKE
Limestone
Schist & Conglomerate
Serpentine
Gabbro
Swampy
Stone Boundary
Portage
Rap.
Pont
Chute
Magnetic Zone
Variation 1907 10°W
Variation 1912 12°W
Variation 1912 21°W
Juggler Mt
Sorcier Mt
PORTAGE BAY
ISLANDS BAY
MINING GROUND
Gold
Copper
EPECULAR PT.
MAWASACHUAN RIVER
CHIBOGOMOU RIVER
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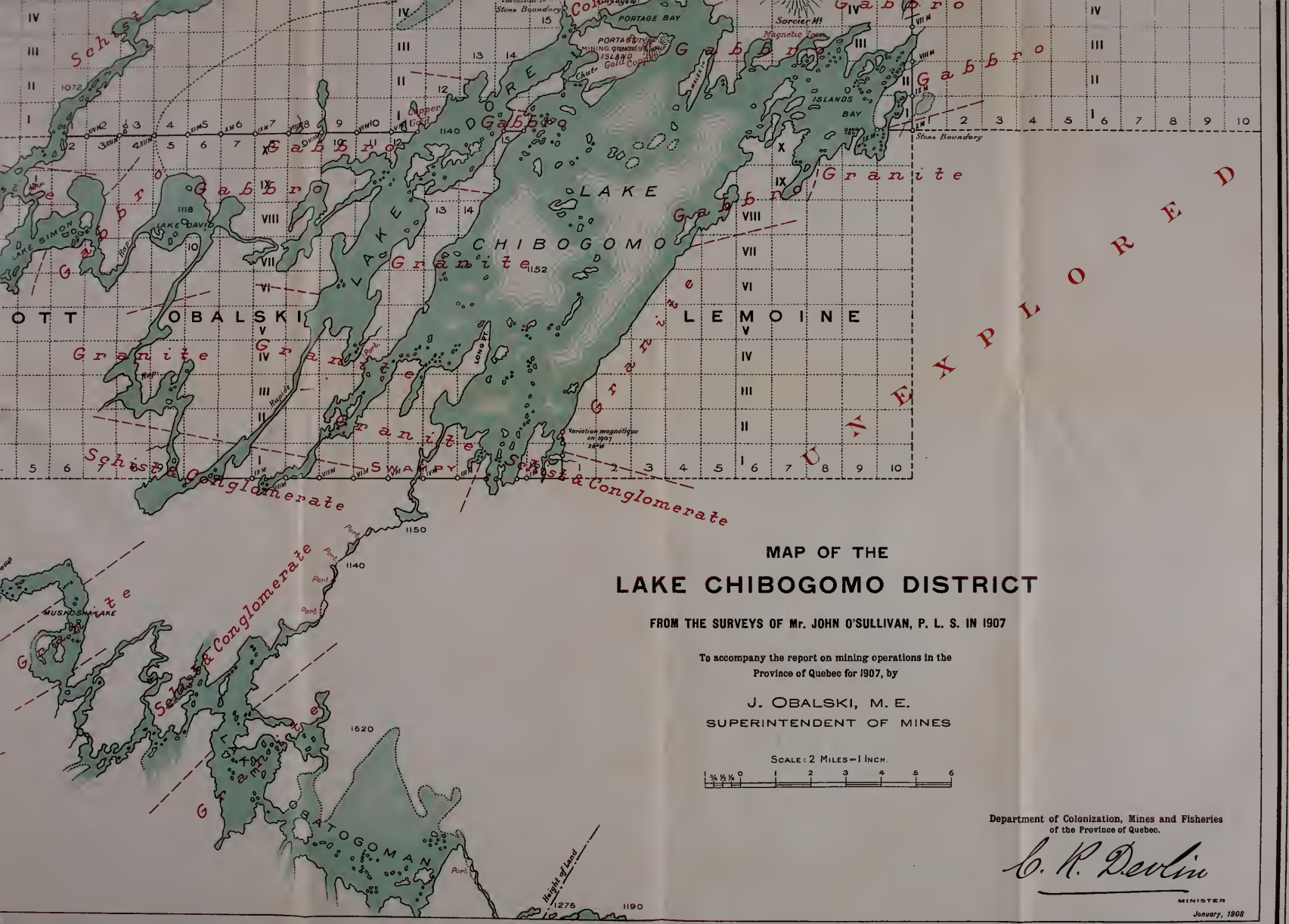

MAP OF THE
LAKE CHIBOGOMO DISTRICT

FROM THE SURVEYS OF Mr. JOHN O'SULLIVAN, P. L. S. IN 1907

To accompany the report on mining operations in the Province of Quebec for 1907, by

J. OBALSKI, M. E.
SUPERINTENDENT OF MINES

SCALE: 2 MILES=1 INCH.

Department of Colonization, Mines and Fisheries of the Province of Quebec.

C. R. Devlin
MINISTER

January, 1908